

SECTION 08710

DOOR HARDWARE

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Furnish door hardware in accordance with hardware group as indicated.
 - 2. Furnish templates and hardware list of hardware as required.
 - 3. Furnish cylinder for entrance doors, coiling doors, electrical panels and fire alarm panels.
- B. General provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to work of this Section.
- C. Related Sections:
 - 1. Section 08110 – Steel Doors and Frames: Installation of finish hardware accordance with standards of this Section.
 - 2. Section 08212 – Flush Wood Doors: Installation of finish hardware in accordance with standards of this Section.
 - 3. Section 08411 – Aluminum Framed Storefronts and Frames: Installation of weather seals for entrances in accordance with standards of this Section.
 - 4. Section 00000 – Folding Partitions.

1.02 REFERENCES

- A. ADA - Americans with Disabilities Act
- B. CBC – California Building Code, 2001 Edition
- C. DHI - Door and Hardware Institute.
 - 1. RL – Recommended Locations for Builders Hardware for Standard Steel Doors and Frames.
- D. NFPA - National Fire Protection Association.
 - 1. NFPA 80 - Fire Doors and Windows
- E. NWWDA – National Wood Window and Door Association
 - 1. I.S.1.7 – Hardware Location for Wood Flush Doors.
- F. UL - Underwriters Laboratories, Inc.

1.03 SUBMITTALS

- A. Product Data: Submit manufacturer's product data for each item of door hardware installation instructions, maintenance of operating parts and finish, and other information necessary to show compliance with requirements.

1. Final hardware schedule, incorporating the Architect's door numbering system coordinated with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
- B. Samples: Submit samples of each type of exposed hardware unit in finish indicated and tagged with full description of coordination with schedule. Submit samples prior to submission of final hardware schedule.
 1. Samples will be returned to the supplier. Units that are acceptable and remain undamaged through submittal, review, and field comparison process may, after final check of operation, be incorporated in the Work, within limitation of keying coordination requirements.
- C. Templates for doors, frames, and other work specified to be factory prepared for the installation of door hardware. Check shop drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.

1.04 QUALITY ASSURANCE

- A. Regulatory Requirements:
 1. Fire Rated Openings: Provide door hardware for fire rated openings that complies with NFPA 890 and requirements of authorities having jurisdiction. Provide only items of door hardware that are listed and are identical to products tested by UL or Intertek Testing Services.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Packing and Shipping
 1. Individually package each unit of finish hardware, complete with proper fastenings and appurtenances, clearly marked on the outside to indicate contents and specific location on the Work.
 2. Packaging of door hardware is responsibility of supplier. As material is received by hardware supplier from various manufacturers, sort and repackage in containers clearly marked with appropriate hardware set number to match set numbers of approved hardware schedule. Two or more identical sets may be packed in the same container.
 - a. Inventory door hardware jointly with representatives of hardware supplier and hardware installer until each is satisfied that count is correct.
- B. Acceptance at Site: Deliver individually packaged door hardware items promptly to place of installation (Sop or Project site).
- C. Storage and protection: Provide secure lock-up for door hardware delivered to the Project, but not yet installed. Control handling and installation of hardware items that are not immediately replaceable so that completion of the Work will not be delayed by hardware losses both before and after installation.

1.06 MAINTENANCE

- A. Maintenance Tools and Instructions: With delivery of keys, furnish a complete set of specialized tools and maintenance instructions as needed for the District's continued adjustment, maintenance, and removal and replacement of door hardware.

PART 2 - PRODUCTS

2.01 GENERAL

- A. Fasteners
1. Furnish necessary screws, bolts, and other fasteners of suitable size and type to anchor the hardware in position for long life under hard use.
 2. Where necessary, furnish fasteners with toggle bolts, expansion shields, sex bolts, and other anchors approved by the architect, according to the material to which the hardware is to be applied and according to the recommendations, of the hardware manufacturer.
 3. Provide fasteners which harmonize with the hardware as to finish and material.
- B. Where butts are required to swing 180 degrees, furnish butts of sufficient throw to clear the trim.
- C. Furnish silencers for door frames at the rate of 3 for each single door and 2 for each door or pair of doors; except weather-stripped doors and doors with light seals, smoke seals or sound seals.

2.02 KEYING

- A. Furnish keyway as directed by the District, District to perform final keying.
- B. Furnish 3 keys for each lock, 12 masterkeys for each set, and 3 grand-masterkeys. Furnish 4 blank keys per lock and 100 extra key blanks.
- C. Construction Keying
1. Furnish a construction masterkey system with 5 keys for locks and cylinders. No more than 6 for any group. The rest in blanks.
 2. Use only the construction keys during construction.
 3. Upon Substantial Completion of the work, as that Date is established by the Architect, void the construction key system; and, in the presence of the Architect demonstrate that the specified keying system is operating properly.
- D. Identification and Delivery
1. Factory stamp permanent keys, "DO NOT DUPLICATE".
 3. Identify permanent keys with tags, and send direct to the District by receipted personal delivery.

2.03 HINGES

A. General

1. provide hinges having minimum of 5 knuckles.
2. provide ball-bearing hinges having concealed bearings and interior self-lubricating bushings.
3. Provide ball bearing hinges on doors with closers.
4. Provide fire-resistance doors with steel hinges.
5. Provide interior doors with non-rising hinges.
6. Provide exterior out-swing doors with non-removable pins.
7. Provide template hinges conforming to ANSI A156.7.
8. Size: In accordance with the following table unless specifically noted otherwise:
 - a. Butt Height
 - 1) Doors 1-3/8 Inches Thick: 3-1/2 inches.
 - 2) Doors 1-3/4 Inches Thick and Up to 41 Inches wide: 4-1/2 inches.
 - 3) Doors 1-3/4 Inches and from 41 inches to 48 inches wide: 4-1/2 inches extra heavy.
 - 4) Doors 2 Inches Thick of Over 48 Inches Wide: 5 inches extra heavy.
 - b. But Widths: Sufficient to clear trim projection when door swings 180 degrees.
 - c. Number Per Door Leaf Unless Otherwise Noted:
 - 1) Door to 60 inches high: 2 hinges.
 - 2) Door to 90 inches high: 3 hinges.
 - 3) door to 120 inches high: 4 hinges.

B. Material

1. Exterior: Stainless steel, ball-bearing.
2. Interior: Steel, ball-bearing.
3. Manufacturer: Ives (IVE), Hager Hinge, Stanley or McKinney.

2.04 LOCKSETS AND LATCHSETS

A. General

1. Cylinders
 - a. Minimum 6 pin interchangeable core cylinders with steel cylindrical cases, and all interior parts shall be non-ferrous. Do not supply plastic, die-cast or aluminum mechanisms.
 - b. Provide in keyway as specified.
 - c. Furnish with plugs of extruded brass bar material full round without flattened areas.
2. Locksets: Provide lockset types specified from the same manufacturer and capable of receiving cylinders complying with requirements specified in "Cylinders" paragraph above.
3. Heavy Duty Cylindrical Locksets (Campus Standard, No Substitutions)
 - a. Product: Corbin-Russwin (C-R), "CL3300 Series" with "NSD" design.
4. Backset: 2-3/4 inches, unless otherwise noted.
5. Strikes

- a. Type: Standard type with extended lips where required to protect trim from marring by latch bolt. Verify cutout types provided in metal frames. Locks shall have stainless steel, 3/4-inch throw.
- b. Material: Same as lock trim.
- 6. Quantity: Provide 1 lockset assembly for each door opening in accordance with the Schedule, unless other noted. Install lockset on active leaf or pair of doors. Pairs of doors scheduled to receive roller latches shall have one for each leaf.

2.05 CLOSERS

A. General

- 1. Door closers, if present, must be set so that it takes at least 3 seconds to close from an open position of 70 degrees to within 3 -inches of the latch. California Title 24 113B.2.5.1, ADAAG 4.13.10
- 2. Provide closers having maximum effort to operate in accordance with ADA as follows: Comply with ADA 4.13.10 for closer delay time.
 - a. Exterior Hinges Doors: 5 pounds.
 - b. Interior Hinges Doors: 5 pounds.
 - c. Fire Doors: Not to exceed 15 pounds.
- 3. Adjust closers in accordance with manufacturer's directions for size of door.
- 4. Provide closers having"
 - a. Full rack and pinion with steel spring and non-gumming, non-freezing hydraulic fluid.
 - b. Provide complete set of separate controls for regulating sweep speed, latch speed, and backcheck. Sizes as recommended by reviewed manufacturer.

B. Door Surface Applied Modern Closers:

- 1. Provide closers with molded plastic covers capable of receiving finishes as specified in Article titled "Finishes" in this Section.
- 2. Provide drop plates at doors having narrow frames.
- 3. Product: LCN (LCN), or Norton.

C. Quantity: Provide each leaf in pairs of doors schedule to receive closers.

D. Overhead and Floor Concealed Closers:

- 1. Provide concealed closes with fully-adjustable spring power, non-gumming, non-freezing hydraulic fluid and delayed action closing, where specified.
- 2. Furnish pivots sets from same manufacturer as concealed closers.
- 3. Provide spindle height to suit installation requirements.
- 4. Product: Rixson (RIX), Division of Assa-Abloy.

2.06 EXIT DEVICES

- A. Exit devices: Von Duprin (VON) as scheduled with push-through pad design, no exposed touch bar fasteners, no exposed cavities when operated.
 - 1. Provide certificate by independent testing laboratory that device has completed over 1,000,000 cycles and can still meet ANSI/BHMA A156.3 - 1994 standards.
 - 2. Compression spring engineering.

3. Non-handed basic device design with center case interchangeable with all functions.
4. All devices shall have quiet return fluid dampeners.
5. All latchbolts shall be deadlocking with ¾" throw and have a self-lubricating coating to reduce friction and wear.
6. Device push bar must release when a force of 32 pounds, or less, of pressure is applied when a force of 250 pounds is applied to the door.
7. Device shall bear UL label for fire and or panic as may be required.
8. All surface strikes shall be roller type and utilize a plate underneath to prevent movement.
9. Panic Hardware shall comply with UBC Standard 10-4 and shall be mounted between 30" and 44" above the finished floor surface. The unlatching force shall not exceed 15 lbs. applied in the direction of travel. Panic hardware shall comply with CBC Section 1003.3.1.9.

2.07 STOPS AND HOLDERS

A. General

1. Unless otherwise noted in Hardware Sets, provide wall type with appropriate fasteners. Where wall type cannot be used, provide floor type. If neither can be used, provide overhead type.
2. Do not install floor stops more than four (4) inches from the face of the wall or partition (Title 24, 1133B.8.6).
3. Overhead stops shall be made of stainless steel and non-plastic mechanisms and finished metal end caps. Field-changeable hold-open, friction and stop-only functions.
4. Manufacturer: Ives (IVE), Trimco, or Builders Brass.

2.08 AUTO BOLTS

A. General

1. Automatic Flush Bolts shall be of the low operating force design. Utilize the top bolt only model for interior doors where applicable and as permitted by testing procedures.
2. Manual flush bolts only permitted on storage or mechanical openings as scheduled.
3. Provide dust proof strikes at openings using bottom bolts.
4. Manufacturer: Ives (IVE), Trimco or Builders Brass.

2.09 DOOR PROTECTION PLATES

A. General

1. Kick Plates
 - a. Width and Anchorage: Provide plates 2 inches narrower than single doors or 1 inch narrower than pair of doors. Ensure anchorage to bottom rail
 - b. Height: Minimum 10 inches.
 - c. Thickness: Stainless steel, 0.050-inches thick, with beveled edges 3 sides.
 - d. Quantity: Provide kick plates on push side of doors unless scheduled differently.

2. Manufacturer: Ives (IVE), Trimco or Builders Brass.

2.10 THRESHOLDS

A. General

1. Provide thresholds that comply with the disability requirements of the ADA.
2. Set thresholds solidly to floor.
3. Provide thresholds notched at frame stops and entire with of frame.
4. Material: Extruded aluminum, unless otherwise noted.
5. Manufacturer: National Guard Products (NGP), or Pemko.
6. Thresholds shall comply with CBC Section 1133B.2.4.1.

2.11 WEATHER-STRIPPING / SEAL

A. General

1. Fire and Smoke
2. Manufacturer: National Guard Products (NGP), or Pemko.
 - a. Material: Self-adhesive silicon seal, rated offr fire and smoke in accordance with ASTM E283, sound rated in accordance with ASTM E90.
 - b. Extent: Seal sets shall consist of gasketing that is continuous at head and jambs.
3. Sound and Thermal Seals
 - a. Material: Aluminum unless otherwise noted,m with adjustable extruded EPDM closed cell sponge neoprene and fier labeled inaccordance with ASTM E152, UL 10C and CBC.
 - b. Extent: Sound seal sets shall consist of Gasketing that is continuous at head and jambs.

2.12 MISCELLANEOUS

- ### **A. Miscellaneous items include, dust proof stikes, coordinators, and exit alarms and alarm contact switches, power supplies.**
1. Manufacturer: See Schedule.
 2. Floor mounted door studs maximum 4-inch form wall.

2.13 KEY CONTROL SYSTEM

A. General

1. Provide system including envelopes, labels, tags with self-locking key clips, receipt forms, thee-way visible card index, temporary markers, permanent markers, and standard metal cabinet, as recommended by system manufacturer, with capacity for 150 percent of the number of locks require for the Project.
2. Provide complete cross index system set up key control manufacturer and place keys on markers and hooks in the cabinet as determined by the final key schedule.
3. Provide hinged-panel type cabinet for wall mounting.
4. Provide "simplex" type push button lock on cabinet. Furnish Telkee (TEL) "AWC450S-SMTC" or equal.

2.14 SILENCERS

A. General

1. Material: Pneumatic rubber, installed in metal frame stops.
2. Quantity: Furnish 3 for single doors and 2 for each door for pairs of doors.
3. Manufacturer: Ives (IVE), Trimco or equal.

2.15 FINISH

- A. Generally to be satin chrome US26D (BHMA 626 on brass or bronze and 652 on steel) unless otherwise noted. Push, Pulls and Kick Plates shall be satin stainless US32D (BHMA 630).
- B. Door closers shall be powder-coated to match other hardware, unless otherwise noted.
- C. Aluminum items to be finished anodized aluminum US28 (628), except thresholds which can be furnished as standard mill finish.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine doors and door frames for damage or defects and examine hardware for compatibility with receiving conditions and suitability to intended use.
- B. Verify that required wall backing has been installed.
- C. Do not install hardware until unsuitable conditions have been corrected or inadequate or defective items have been replaced.

3.02 PREPARATION

- A. Coordinate with work requiring hardware or work to which hardware attaches.
- B. Provide necessary copies of schedules or templates in ample time to avoid fabrication and construction delays.
- C. Provide key control system installer with 1 reviewed copy of hardware schedule and keying instructions.

3.03 INSTALLATION

- A. Mount hardware units at heights indicated in DHI RL and NWWDA I.S.1.7, except as specifically indicated or required to comply with governing regulations and except as otherwise directed by the Architect. Mount floor stops maximum 4" from wall.
- B. Install each hardware item in compliance with the manufacturer's instructions and recommendations. Where cutting and fitting is required to install hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal,

storage, and reinstallation or application of surface protection with finishing work specified in Section 09900. Do not install surface mounted items until finishes have been completed on the substrates involved.

- C. Set units level, plumb, and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.
- D. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors in accordance with industry standard.
- E. Set thresholds for exterior doors in full bed of butyl-rubber or polyisobutylene mastic sealant complying with requirements specified in Section 07900.
- F. Weather-stripping and Seals: Comply with manufacturer's instructions and recommendations to the extent installation requirements are not otherwise indicated.

3.04 ADJUSTING, CLEANING AND DEMONSTRATING

- A. Adjust and check each operating item of hardware and each door, to ensure proper operation or function of every unit. Replace units which cannot be adjusted to operate freely and smoothly as intended for the application made.
- B. Clean adjacent surface soiled by hardware installation.
- C. Instruct the District's Personnel in proper adjustment and maintenance of hardware finishes.

3.05 SCHEDULE

- A. The items listed in the following schedule shall conform to the requirements of the foregoing specifications.
- B. The Door Schedule on the Drawings indicates which hardware set is used with each door.

Manufacturers Abbreviations (Mfr.)

FAL	=	Falcon	Cylinders
GLY	=	Glynn-Johnson Corporation	Overhead Door Stops
IVE	=	Ives	Hinges, Pivots, Bolts, Coordinators, Dust Proof Strikes, Push Pull & Kick Plates, Door Stops & Silencers
LCN	=	LCN	Door Closers
NGP	=	National Guard Products	Thresholds, Gasketing & Weather- stripping
PEM	=	Pemko	Thresholds, Gasketing & Weather- stripping
SCH	=	Schlage Lock Company	Locks, Latches

ROTON®

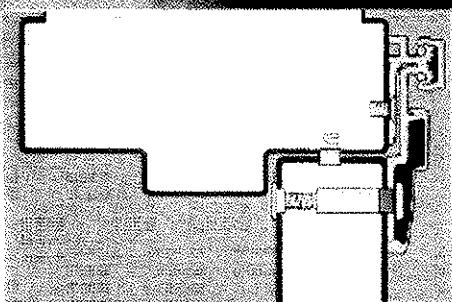
Up To And Including A 3-Hour Fire Label

3

HOUR FIRE LABEL

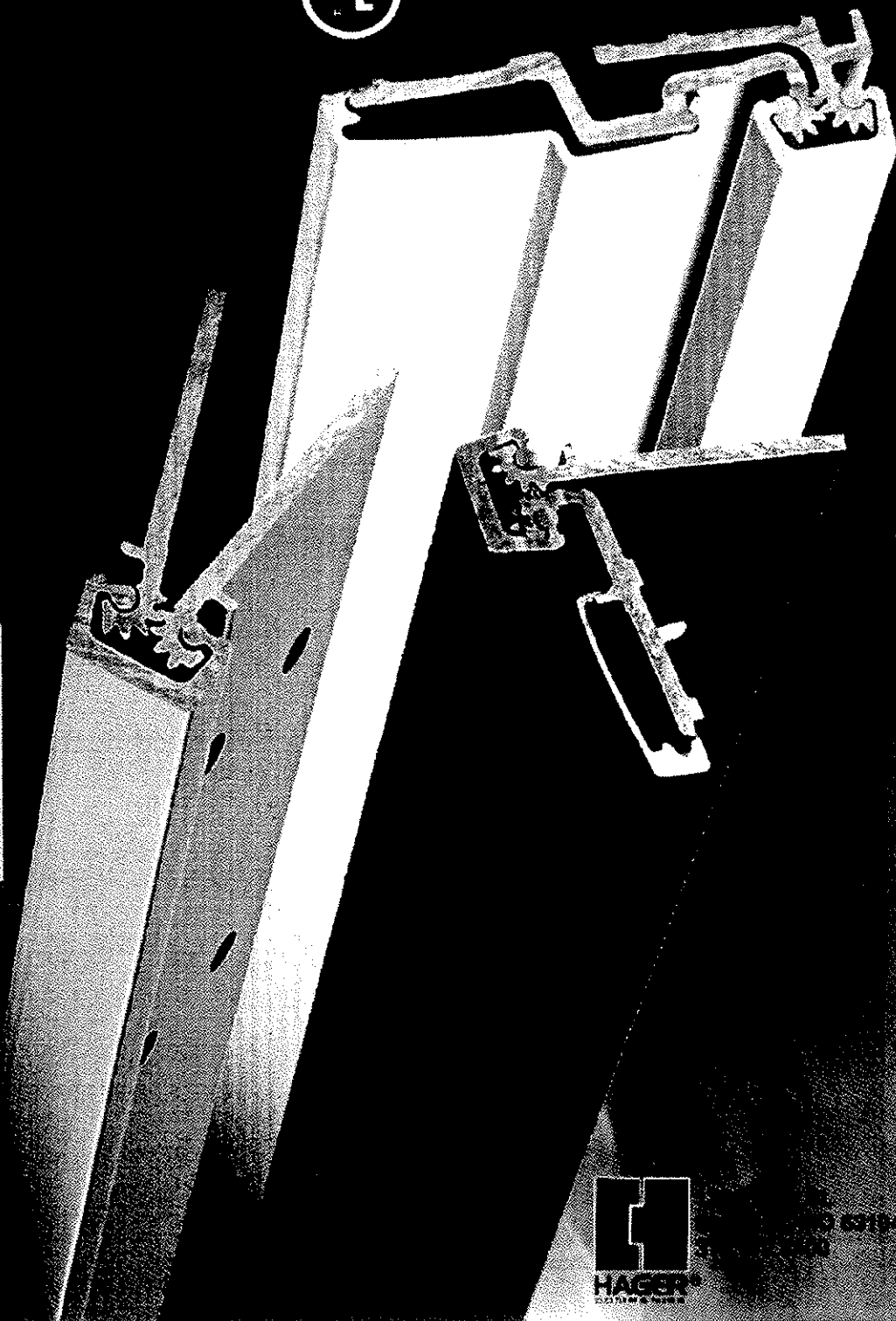


These doors
wear with
And now
labels. Hager
that our Roton



geared hinges have met the requirements for all Fire Labels. At last, all of the advantages provided by Hager's Roton full-length geared hinge can be put to work in applications where fire containment is a must, such as corridors and stairwells in schools, universities and hospitals.

So if you're hanging "A", "B" or "C" Label doors, don't get burned by conventional hinges that can rust, leak energy and wear out quickly. Get things in gear and hang your doors right—with Roton.



1-800-631-1144
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HAGER® CONTINUOUS GEARED HINGES™

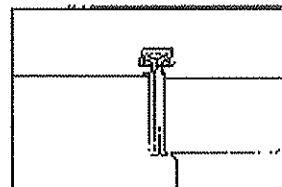
Fire Ratings -- Underwriters Laboratory Fire Rating / File # R14627

Fire Rated Hoton	Fully Concealed	Half Surface	Half Mortise
20 Minute Fire Rated Wood Door x Hollow Metal Frame	U/L - FF	U/L - FF	U/L - FF
20 Minute Fire Rated Metal Door x Hollow Metal Frame	U/L - FF	U/L - FF	U/L - FF
30 Minute Fire Rated Wood Door x Hollow Metal Frame (Canada)	U/L - FF	U/L - FF	U/L - FF
30 Minute Fire Rated Metal Door x Hollow Metal Frame (Canada)	U/L - FF	U/L - FF	U/L - FF
45 Minute Fire Rated Wood Door x Hollow Metal Frame	U/L - FF	U/L - Stud	U/L - Stud
45 Minute Fire Rated Metal Door x Hollow Metal Frame	U/L - FF	U/L - Stud	U/L - Stud
90 Minute Fire Rated Wood Door x Hollow Metal Frame	U/L - Stud	U/L - Stud	U/L - Stud
90 Minute Fire Rated Metal Door x Hollow Metal Frame All Gauges	U/L - FF	U/L - Stud	U/L - Stud
3 Hour Fire Rated Hollow Metal Door x Hollow Metal Frame	U/L - Stud	U/L - Stud	U/L - Stud

Maximum Size of Single Rated Door Leaf 4'0" Wide x 10'0" High
 Maximum Rated Opening Size for Single Door 4'0" Wide x 10'0" High
 Maximum Rated Opening Size for Pairs of Doors 8'0" Wide x 10'0" High

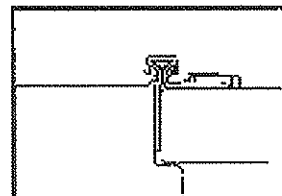
Fully Concealed -- These models are concealed between the rabbet of the frame and the hinge edge of the door.

Models available: 780-041, 780-041 HD, 780-110, 780-110 HD, 780-111, 780-111 HD, 780-112, 780-112 HD, 780-112 LL, 780-224, 780-224 HD, 780-224 LL, 780-225, 780-225 HD, 780-226 LL



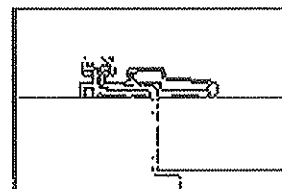
Half Surface -- These models have the frame leaf concealed between the rabbet of the frame and the edge of the door. The door leaf is mounted to the door with through bolts.

Models available: 780-045, 780-045 HD, 780-046, 780-046 HD, 780-053, 780-053 HD, 780-054, 780-054 HD, 780-211 HD



Full Surface -- These models have the frame leaf mounted to the face of the frame and the face of the door. The door leaf is mounted to the door with through bolts.

Models available: 780-057, 780-057 HD, 780-157, 780-157 HD, 780-210, 780-210 HD, 780-257 HD, 780-300 HD



For use on swing type doors of hollow metal, lin-clad, sheet-metal and steel covered composite type rated up to and including 3 hours.

Wood composite doors rated up to and including 1 1/2 hours.

Wood core rated up to 20 minutes without hose stream, non-studded.

Maximum Door Size	Single 4'0" x 10'0"	Double 8'0" x 10'0"	Thickness 1 3/4"
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Standard Lengths available -- 79", 83", 85", 95", 119".
 Custom lengths are also available under 119".

Example: 780-112 LL 83" Clear U/L - FF
 Example: 780-211 HD 95" DB U/L - Stud

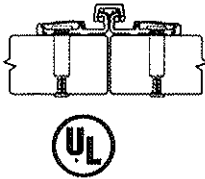
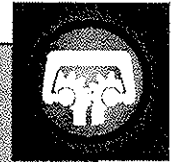
Customer Information

HAGER COMPANIES • 138 VICTOR STREET • ST. LOUIS, MO 63157-0300

(314) 772-4400 • (800) 325-9995 • FAX (800) 782-0149

#6-500-1500

Full Surface

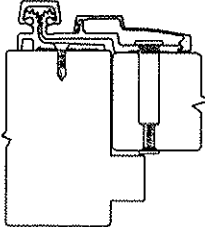


Door of any Material • Standard and Heavy Duty
Standard Duty for medium frequency doors. Heavy Duty for high frequency doors or heavy medium frequency doors.

780-057

780-057 HD

- Clearance: 1/32" minimum recommended between doors
- Fasteners: Sexbolts (wood or machine screws available upon request)
- Length Options: Standard and Custom
- Door Reinforcement: None required
- Fire Rating: Up to 3 hr. metal and 90 min. wood composite (with studs)
- Special Features:
 - Bi-fold applications
 - Security moldings



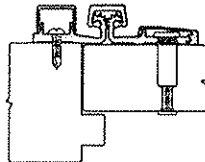
Door of any Material • Standard and Heavy Duty
Standard Duty for medium frequency doors. Heavy Duty for high frequency doors or heavy medium frequency doors.

780-210

780-210 HD



- Clearance: 1/32" minimum recommended for hinge side plus standard lockside clearance. 15/8" (41 mm) minimum frame face required plus 3/16" (5 mm) rotational clearance
- Fasteners: Drill-quick® screws and sexbolts
- Length Options: Standard and Custom
- Door Reinforcement: None required
- Frame Reinforcement: None required to 200 lbs. Heavier weight use 16 gauge channel.
- Fire Rating: Up to 3 hr. metal and 90 min. wood composite (with studs)
- Special Features:
 - Can be used with any door and frame material
 - Security molding
 - 1/32" inset

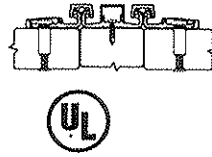


Door of any Material • Standard and Heavy Duty
Standard Duty for medium frequency doors. Heavy Duty for high frequency doors or heavy medium frequency doors.

780-157

780-157 HD

- Clearance: 1/32" minimum recommended for hinge side plus standard lockside clearance
- Fasteners: Drill-quick® screws and sexbolts
- Length Options: Standard and Custom
- Door Reinforcement: None required
- Frame Reinforcement: None required to 200 lbs. Heavier weight use 16 gauge channel.
- Fire Rating: Up to 3 hr. metal and 90 min. wood composite (with studs)
- Special Features:
 - For surface applications where frame face dimension is limited
 - Security moldings
 - 1/16" inset



Door of any Material • Heavy Duty
Heavy Duty for high frequency doors or heavy medium frequency doors.

780-257 HD



- Clearance: 1/32" minimum recommended between mullion and door plus standard lockside clearance. 7/8" (22 mm) to 2 1/4" (57 mm) mullion width
- Fasteners: Drill-quick® screws and sexbolts
- Length Options: Standard and Custom
- Door Reinforcement: None required
- Frame Reinforcement: None required to 200 lbs. Heavier weight use 16 gauge channel.
- Fire Rating: Up to 3 hr. metal and 90 min. wood composite (with studs)
- Special Features:
 - Double hinge for hanging two entrance doors from a fixed mullion
 - Security molding
 - 1/16" inset

Roton is the hinge with benefits

- ☞ Dutch door applications
- ☞ Heavy duty use with extra bearings
- ☞ Lead lined use with double row of screw holes
- ☞ Rust proof extruded aluminum alloy
- ☞ Choice of decorative cover channels

- ☞ Special powder coated colors
- ☞ New construction and retrofit applications
- ☞ Warped frame or misaligned door solutions
- ☞ Energy savings from continuous barrier
- ☞ Better noise reduction
- ☞ Electric modification options
- ☞ Exceeds 1 million door cycles



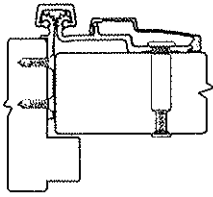
Fluted Back

Rounded Back

Decorative Insert

Note: Refer to Hagerco.com for door and frame clearance dimensions.

Half Surface

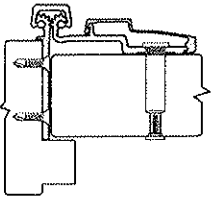


Door of any Material • Standard and Heavy Duty
Standard Duty for medium frequency doors. Heavy Duty for high frequency doors or heavy medium frequency doors.

780-045 780-045 HD



- Clearance: 5/32" minimum recommended hinge side plus standard lockside clearance
- Fasteners: Drill-kwick® screws and Sexbolts
- Length Options: Standard and Custom
- Door Reinforcement: None required
- Frame Reinforcement: None required to 200 lbs. Heavier weight use 16 gauge channel.
- Fire Rating: Up to 3 hr. metal and 90 min. wood composite (with studs)
- Special Features:
- Frame leaf alignment rib for proper hinge location
 - 9/32" inset
 - Security molding

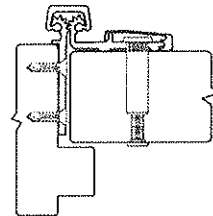


Door of any Material • Standard and Heavy Duty
Standard Duty for medium frequency doors. Heavy Duty for high frequency doors or heavy medium frequency doors.

780-046 780-046 HD



- Clearance: 5/32" minimum recommended hinge side plus standard lockside clearance
- Fasteners: Drill-kwick® screws and Sexbolts
- Length Options: Standard and Custom
- Door Reinforcement: None required
- Frame Reinforcement: None required to 200 lbs. Heavier weight use 16 gauge channel.
- Fire Rating: Up to 3 hr. metal and 90 min. wood composite (with studs)
- Special Features:
- Complete frame rabbet coverage for 1 3/4" (45 mm) frames, with 1 3/8" doors
 - Frame leaf alignment rib for proper hinge location
 - 9/32" inset
 - Security molding

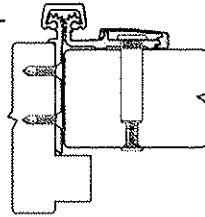


Door of any Material • Standard and Heavy Duty
Standard Duty for medium frequency doors. Heavy Duty for high frequency doors or heavy medium frequency doors.

780-053 780-053 HD



- Clearance: 5/32" minimum recommended hinge side plus standard lockside clearance
- Fasteners: Drill-kwick® screws and Sexbolts
- Length Options: Standard and Custom
- Door Reinforcement: None required
- Frame Reinforcement: None required to 200 lbs. Heavier weight use 16 gauge channel.
- Fire Rating: Up to 3 hr. metal and 90 min. wood composite (with studs)
- Special Features:
- Frame leaf alignment rib for proper hinge location
 - 3/32" inset
 - Security molding

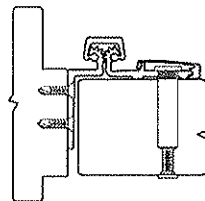


Door of any Material • Standard and Heavy Duty
Standard Duty for medium frequency doors. Heavy Duty for high frequency doors or heavy medium frequency doors.

780-054 780-054 HD



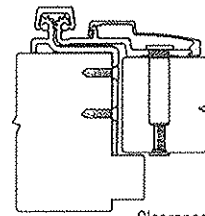
- Clearance: 5/32" minimum recommended hinge side plus standard lockside clearance
- Fasteners: Drill-kwick® screws and Sexbolts
- Length Options: Standard and Custom
- Door Reinforcement: None required
- Frame Reinforcement: None required to 200 lbs. Heavier weight use 16 gauge channel.
- Fire Rating: Up to 3 hr. metal and 90 min. wood composite (with studs)
- Special Features:
- Frame leaf alignment rib for proper hinge location
 - 3/32" inset
 - Security molding



Door of any Material • Standard and Heavy Duty
Standard Duty for medium frequency doors. Heavy Duty for high frequency doors or heavy medium frequency doors.

780-155 780-155 HD

- Clearance: 5/32" minimum recommended hinge side plus standard lockside clearance
- Fasteners: Drill-kwick® screws and Sexbolts
- Length Options: Standard and Custom
- Door Reinforcement: None required
- Frame Reinforcement: None required to 200 lbs. Heavier weight use 16 gauge channel.
- Special Features:
- For center hung and double egress conversions
 - Security molding



Door of any Material • Heavy Duty
Heavy Duty for high frequency doors or heavy medium frequency doors.

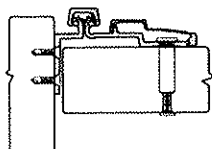
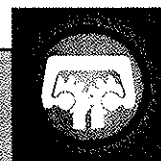
780-211 HD



- Clearance: 5/32" minimum recommended hinge side plus standard lockside clearance
- Fasteners: Drill-kwick® screws and Sexbolts
- Length Options: Standard and Custom
- Door Reinforcement: None required
- Frame Reinforcement: None required to 200 lbs. Heavier weight use 16 gauge channel.
- Fire Rating: Up to 3 hr. metal and 90 min. wood composite (with studs)
- Special Features:
- Frame leaf wrap-around reinforcement for damaged frames
 - 1/16" inset
 - Security molding

Note: Refer to Hagerco.com for door and frame clearance dimensions.

Half Surface



Door of any Material • Standard and Heavy Duty
Standard Duty for medium frequency doors. Heavy Duty for high frequency doors or heavy medium frequency doors.

780-213

780-213 HD

Clearance: 5/32" minimum recommended hinge side plus standard lockside clearance

Fasteners: Drill-quick® screws and Sexbolts

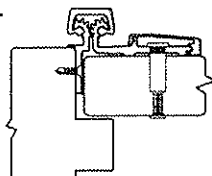
Length Options: Standard and Custom

Door Reinforcement: None required

Frame Reinforcement: None required to 200 lbs. Heavier weight use 16 gauge channel.

Fire Rating: Up to 3 hr. metal and 90 min. wood composite (with studs)

Special Features: • For center hung door where large edge radii or finger guards require a long reach
• Security molding



Door of any Material • Standard and Heavy Duty
Standard Duty for medium frequency doors. Heavy Duty for high frequency doors or heavy medium frequency doors.

780-259

780-259 HD

Clearance: 5/32" minimum recommended hinge side plus standard lockside clearance

Fasteners: Drill-quick® screws and Sexbolts

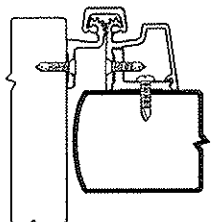
Length Options: Standard and Custom

Door Reinforcement: None required

Frame Reinforcement: None required to 200 lbs. Heavier weight use 16 gauge channel.

Fire Rating: Up to 3 hr. metal and 90 min. wood composite (with studs)

Special Features: • Frame leaf alignment rib for proper hinge location
• For millwork, toilet stall doors, etc.
• 1/8" inset
• Security molding



Door of any Material • Heavy Duty
Heavy Duty for high frequency center hung doors or heavy medium frequency center hung doors.

780-300 HD

Clearance: 1/32" minimum recommended between door and frame

Fasteners: Drill-quick® screws

Length Options: Standard and Custom

Door Reinforcement: None required to 200 lbs. Heavier weight use 16 gauge channel.

Frame Reinforcement: None required to 200 lbs. Heavier weight use 16 gauge channel.

Special Features: • For center hung door application
• 3/4" minimum inset



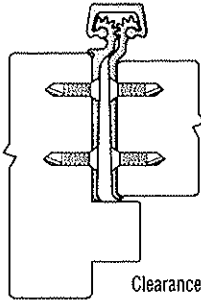
Series 780 Roton hinges designated by Underwriter's Laboratories, Inc. (U.S. and Canada) are approved for use on swing type doors. Maximum rated opening size is 4'0" wide x 10'0" high for single doors and 8'0" wide x 10'0" high for pairs of doors.

Studs required for wood composite doors, rated 1½ hours and hollow metal doors rated 3 hours.



Note: Refer to Hagerco.com for door and frame clearance dimensions.

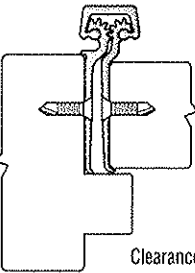
Concealed Leaf



Solid Core Wood Door
For medium frequency $1\frac{3}{4}$ " solid core wood interior doors up to 100 lbs.

750-134

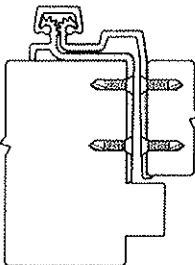
- Clearance: $5/16$ " (8 mm) hinge side plus standard lockside clearance
Fasteners: Dril-kwik® and wood screws
Length Options: Standard and Custom
Door Reinforcement: None required
Frame Reinforcement: None required
Special Features:
- Door edge protection lip
 - Offset joint to clear casing
 - Frame leaf alignment rib for proper hinge location



Solid Core Wood Door
For medium frequency $1\frac{3}{8}$ " solid core wood interior doors up to 100 lbs.

750-138

- Clearance: $5/16$ " (8 mm) hinge side plus standard lockside clearance
Fasteners: Dril-kwik® and wood screws
Length Options: Standard and Custom
Door Reinforcement: None required
Frame Reinforcement: None required
Special Features:
- Door edge protection lip
 - Offset joint to clear casing
 - Frame leaf alignment rib for proper hinge location



Door of any Material • Standard and Heavy Duty
Standard Duty for medium frequency doors.
Heavy Duty for high frequency $1\frac{3}{4}$ " doors.

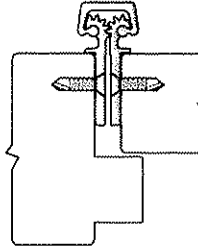
780-041

780-041 HD

780-041 LL



- Clearance: $5/16$ " (8 mm) hinge side plus standard lockside clearance
Fasteners: Dril-kwik® screws
Length Options: Standard and Custom
Door Reinforcement: None required to 200 lbs. Heavier weight use 16 gauge channel.
Frame Reinforcement: None required to 200 lbs. Heavier weight use 16 gauge channel.
Fire Rating: Up to 3 hr. metal and 90 min. wood composite (with studs)
Special Features:
- Lead lined model for hospital x-ray room doors with double row of screws to straddle lead (specify "LL")
 - Door edge protection lip
 - Swing-clear action for patient room doors and ADA compliant for classroom doors
 - Not recommended for doors with a beveled edge on the hinge side



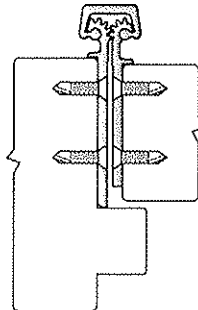
Door of any Material • Standard and Heavy Duty
Standard Duty for medium frequency doors. Heavy Duty for high frequency doors or heavy medium frequency doors.

780-110

780-110 HD



- Clearance: $5/16$ " (8 mm) hinge side plus standard lockside clearance
Fasteners: Dril-kwik® screws
Length Options: Standard and Custom
Door Reinforcement: None required to 200 lbs. Heavier weight use 16 gauge channel.
Frame Reinforcement: None required to 200 lbs. Heavier weight use 16 gauge channel.
Special Features:
- Frame and door leaf alignment ribs for proper hinge and door location



Door of any Material • Standard and Heavy Duty
Standard Duty for medium frequency doors. Heavy Duty for high frequency doors or heavy medium frequency doors.

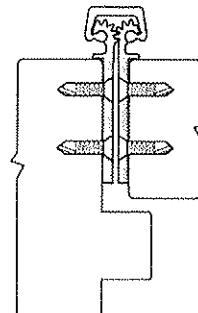
780-111

780-111 HD

780-111 LL



- Clearance: $5/16$ " (8 mm) hinge side plus standard lockside clearance
Fasteners: Dril-kwik® screws
Length Options: Standard and Custom
Door Reinforcement: None required to 200 lbs. Heavier weight use 16 gauge channel.
Frame Reinforcement: None required to 200 lbs. Heavier weight use 16 gauge channel.
Fire Rating: Up to 3 hr. metal and 90 min. wood composite (with studs)
Special Features:
- Lead lined model for hospital x-ray room doors with double row of screws to straddle lead (specify "LL")
 - Frame and door leaf alignment ribs for proper hinge and door location
 - $1/8$ " inset



Door of any Material • Standard and Heavy Duty
Standard Duty for medium frequency doors. Heavy Duty for high frequency doors or heavy medium frequency doors.

780-112

780-112 HD

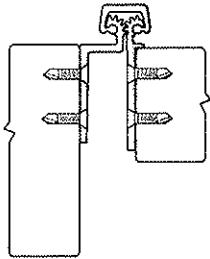
780-112 LL



- Clearance: $5/16$ " (8 mm) hinge side plus standard lockside clearance
Fasteners: Dril-kwik® screws
Length Options: Standard and Custom
Door Reinforcement: None required to 200 lbs. Heavier weight use 16 gauge channel.
Frame Reinforcement: None required to 200 lbs. Heavier weight use 16 gauge channel.
Fire Rating: Up to 3 hr. metal and 90 min. wood composite (with studs)
Special Features:
- Lead lined model for hospital x-ray room doors with double row of screws to straddle lead (specify "LL")
 - Frame and door leaf alignment ribs for proper hinge and door location

Note: Refer to Hagerco.com for door and frame clearance dimensions.

Concealed Leaf

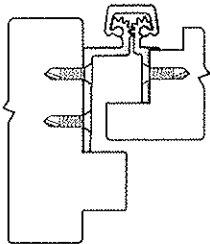


Door of any Material • Standard and Heavy Duty
Standard Duty for medium frequency doors.
Heavy Duty for high frequency doors
or heavy medium frequency doors.

780-113

780-113 HD

- Clearance: 13/16" (21 mm) hinge side plus standard lockside clearance
Fasteners: Drill-kwik® screws
Length Options: Standard and Custom
Door Reinforcement: None required to 200 lbs. Heavier weight use 16 gauge channel.
Frame Reinforcement: None required to 200 lbs. Heavier weight use 16 gauge channel.
Special Features:
- "Safety Hinge" for kindergartens, nursing homes, daycares etc. (when used without frame stop)
 - Door leaf alignment rib for proper door location
 - 1/16" inset

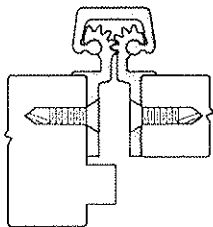


Door of any Material • Standard and Heavy Duty
Standard Duty for medium frequency doors.
Heavy Duty for high frequency doors
or heavy medium frequency doors.

780-114

780-114 HD

- Clearance: 15/16" (24 mm) hinge side plus standard lockside clearance
Fasteners: Drill-kwik® screws
Length Options: Standard and Custom
Door Reinforcement: None required to 200 lbs. Heavier weight use 16 gauge channel.
Frame Reinforcement: None required to 200 lbs. Heavier weight use 16 gauge channel.
Special Features:
- For deep inset or flush-with-frame applications (when using rabbeted frames), center hung doors, heavy cabinets
 - For square edge doors on hinge side

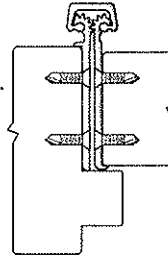


Door of any Material • Standard and Heavy Duty
Standard Duty for medium frequency doors.
Heavy Duty for high frequency doors
or heavy medium frequency doors.

780-208

780-208 HD

- Clearance: 1/2" (13 mm) hinge side plus standard lockside clearance
Fasteners: Drill-kwik® screws
Length Options: Standard and Custom
Door Reinforcement: None required to 200 lbs. Heavier weight use 16 gauge channel.
Frame Reinforcement: None required to 200 lbs. Heavier weight use 16 gauge channel.
Special Features:
- For millwork, toilet stall doors, windows, and rabbeted bi-fold doors
 - Frame and door leaf alignment ribs for proper hinge and door location



Door of any Material • Standard and Heavy Duty
Standard Duty for medium frequency doors.
Heavy Duty for high frequency doors
or heavy medium frequency 1 3/4" doors.

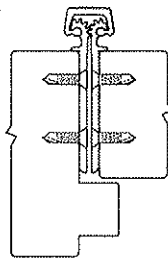
780-224

780-224 HD

780-224 LL



- Clearance: 5/16" (8 mm) hinge side plus standard lockside clearance
Fasteners: Drill-kwik® screws
Length Options: Standard and Custom
Door Reinforcement: None required to 200 lbs. Heavier weight use 16 gauge channel.
Frame Reinforcement: None required to 200 lbs. Heavier weight use 16 gauge channel.
Fire Rating: Up to 3 hr. metal and 90 min. wood composite (with studs)
Special Features:
- Lead lined model for hospital x-ray room doors with double row of screws to straddle lead (specify "LL")
 - Door edge protection tip
 - Frame and door leaf alignment ribs for proper hinge and door location
 - 3/32" inset



Door of any Material • Standard and Heavy Duty
Standard Duty for medium frequency doors.
Heavy Duty for high frequency doors
or heavy medium frequency doors
2" thick or greater.

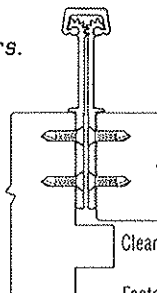
780-226

780-226 HD

780-226 LL



- Clearance: 5/16" (8 mm) hinge side plus standard lockside clearance
Fasteners: Drill-kwik® screws
Length Options: Standard and Custom
Door Reinforcement: None required to 200 lbs. Heavier weight use 16 gauge channel.
Frame Reinforcement: None required to 200 lbs. Heavier weight use 16 gauge channel.
Special Features:
- Lead lined model for hospital x-ray room doors with double row of screws to straddle lead (specify "LL")
 - Frame and door leaf alignment ribs for proper hinge and door location



Wide Throw • Door of any Material • Heavy Duty
Heavy Duty for high frequency doors
or heavy medium frequency doors.

780-235 HD

- Clearance: 5/16" (8 mm) hinge side plus allow an additional 1/32" to the standard lockside clearance
Fasteners: Drill-kwik® screws
Length Options: Standard and Custom
Door Reinforcement: None required to 200 lbs. Heavier weight use 16 gauge channel.
Frame Reinforcement: None required to 200 lbs. Heavier weight use 16 gauge channel.
Special Features:
- Wide Throw for applications that require extra clearance for door and frame
 - Frame and door leaf alignment ribs for proper hinge and door location
 - For square edge doors on hinge side



Note: Refer to Hagerco.com for door and frame clearance dimensions.

Products

- Architectural Hinges
- Residential Hinges
- Roton
- Continuous Stainless Steel Hinges
- Sliding Door Hardware
- Trim & Auxiliary
- Thresholds & Weatherstripping
- Locks
- Door Closers
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- Glossary of Hardware Abbreviations

< Back

Hager Products » Roton » General Information » **Roton Cover Channels****Roton Cover Channels**

Special Roton Cover Channels from Hager are now available. Hager Companies has the finishing touches you need for another great entrance. Hager is featuring the new *Round Back* cover channel for a sleek architectural look. The *Decorative Back* cover channel is available for a personalized look. You provide a 1/2" wide decorative insert that allows you to match the architecture of your building. Another option is the *Fluted Back* cover channel for a decorative effect. Hager's cover channels may be ordered with any Roton 750 / 780 series hinge. Hager Companies gives you the advantage by providing all your custom products.

Vital Stats:***Round Back Cover Channels (Shown)**

Clear Anodized 79" 83" 85" 95" 119"
Bronze Anodized

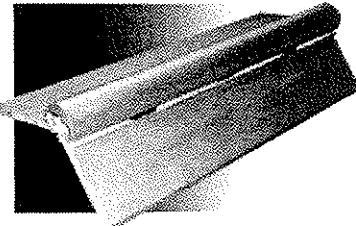
Decorative Back Cover Channels

Clear Anodized 79" 83" 85" 95" 119"
Bronze Anodized

Fluted Back Cover Channels

Clear Anodized 79" 83" 85" 95" 119"
Bronze Anodized

For our complete line of Continuous Hinges, visit www.hagerco.com

**ROTON Cover Channel Compatibility**

Hinge Model	Flat FBCC	Round RBCC	Fluted FLCC	Decorative DBCC
750-134	✖	✖	✖	✖
750-138	✖	✖	✖	✖
780-041	✖	✖	✖	✖
780-045	✖	✖	✖	✖
780-046	✖	✖	✖	✖
780-053	✖	✖	✖	✖
780-054	✖	✖	✖	✖
780-057	✖	✖	✖	✖
780-110	✖	✖	✖	✖
780-111	✖	✖	✖	✖
780-112	✖	✖	✖	✖
780-113	✖	✖	✖	✖
780-114	✖	✖	✖	✖
780-155	✖	✖	✖	✖
780-157	✖	✖	✖	✖
780-208	✖	✖	✖	✖
780-210	✖	✖	✖	✖
780-211	✖	✖	✖	✖
780-213	✖	✖	✖	✖
780-224	✖	✖	✖	✖
780-226	✖	✖	✖	✖
780-235	✖	✖	✖	✖
780-257	✖	✖	✖	✖
780-259	✖	✖	✖	✖
780-300	✖	✖	✖	✖

**Fluted Back FLCC****Rounded Back RBCC****Decorative Insert DBCC**

CS/16/04



Architectural Hinges



Residential Hardware



Roton Continuous Geared Hinges



Sliding Door Hardware



Trim & Auxiliary Hardware



Thresholds & Weatherstripping

HAGER
COMPANIES

[Terms of Use]

Roton Continuous Geared Hinges



General Information

DOOR AND FRAME PREPARATION

All Roton Continuous Geared Hinges are surface-applied. Cutout design and spacing coordination is thereby eliminated in both new construction and restoration work. Reinforcement plates are not required in doors or frames except where the gauge is too thin for the fasteners in relation to the door weight or where abusive operation is anticipated.

Blank frames may be ordered with strike prep only or with a strike prep furnished on both sides to eliminate handing with any Roton model that will cover the frame rabbet. Doors should always be ordered without cutouts except for use in labeled openings in which the tested door assembly may have manufacturing restrictions. Continuous frame mortar guards are desirable for masonry walls to avoid screw fastener interference with the mortar. An effective mortar guard made from an ordinary 1" (25.4 mm) x 2" (51 mm) stud, fastened to the back side of the frame can also be used. Check with both the frame supplier and the contractor for the best method.

The main cause of door and frame breakdown is "kickback shock" transferred to conventional butt hinges or pivots. Roton bonds the door frame into a single, integrated unit, dissipating impact loads harmlessly.

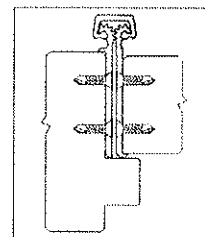
Door Closers

Conventional surface or concealed sliding closers may be used with Roton. (Note: Pivot type floor closers with a fixed, conflicting pivot point may not be used). Closers will last considerably longer, adjust to operating requirements more readily and show consistent settings due to the reduced operating forces of Roton hinging.

ROTON TYPES

Concealed

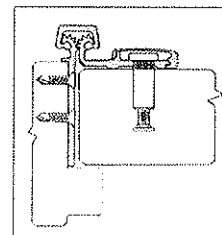
These models have leaves which are concealed between the rabbet of the frame and the hinge edge of the door.



Models available: 500-048, 780-041, 780-041HD, 780-110, 780-110HD, 780-111, 780-111HD, 780-112, 780-112HD, 780-112LL, 780-224, 780-224HD, 780-224LL, 780-226, 780-226HD, 780-226LL, 1200-600, 1200-650

Half Surface

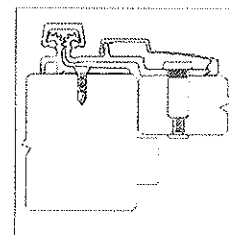
These models have the frame leaf concealed between the rabbet of the frame and the edge of the door. The door leaf is mounted to the face of the door with sex bolts (thru-bolts) or screws.



Models available: 500-200, 780-045, 780-045HD, 780-046, 780-046HD, 780-053, 780-053HD, 780-054, 780-054HD, 780-211HD, 780-300HD

Full Surface

These models have the frame leaf mounted to the face of the frame. The door leaf is mounted to the face of the door with sex bolts (thru-bolts).



Models available: 500-220, 780-057, 780-057HD, 780-157, 780-157HD, 780-210, 780-210HD, 780-257HD



Roton Continuous Geared Hinges

General Information

PROCESS FOR CHOOSING THE CORRECT ROTON MODEL

Determine	Select
Door and frame application (i.e. flush door and frame, inset door, door thickness, door height, etc.)	Roton model
Frequency of door cycling and weight of door	Light, Standard, Heavy or Extra Heavy Duty, or Lead Lined
Door and frame material	Fasteners
Door opening finish	Roton finish
Fire rating requirements, if needed	With stud or without stud

Checking the Load

To assist in the selection of an appropriate Roton Continuous Geared Hinge Series, divide the door weight including the weight of the hardware by the number of bearings in the Roton Continuous Geared Hinge under consideration, then use the following guideline, with a maximum 4'0" wide door:

500 Series:	4" Centers	
750 Series:	5 1/4" Centers	(Typical 7' door: 16 bearings)
780 Series:	5 1/8" Centers	(Typical 7' door: 16 bearings)
780 HD & LL:	2 9/16" Centers	(Typical 7' door: 32 bearings)
1200 Series:	2 1/2" Centers	(Typical 7' door: 33 bearings)

Frequency	Load
Low frequency interior doors	20 lbs. per bearing
Low frequency, very heavy doors (lead lined x-ray doors, ballistics doors, high security doors) with double rows of fasteners	30 lbs. per bearing
Medium frequency interior doors	15 lbs. per bearing
Medium frequency exterior doors	10 lbs. per bearing
High frequency exterior doors	7.5 lbs. per bearing
Very high frequency doors	5 lbs. per bearing

FIRE RATINGS

Underwriters Laboratories, Inc.

Fire Rating/File #R14627

780 Series Roton Continuous Geared Hinges are approved for use on 4'x10' swing type door



- Hollow metal, tin-clad, sheet-metal and steel covered composite type rated up to and including 3 hours
- Wood composite doors rated up to and including 1 1/2 hours
- Wood core doors rated up to 20 minutes without hose stream, non-studded

Fire Rated Roton	Fully Concealed	Half Surface	Full Surface
20 Minute Fire Rated Wood Door x Fire Rated Hollow Metal Frame	U/L — FF	U/L — FF	U/L — FF
20 Minute Fire Rated Metal Door x Fire Rated Hollow Metal Frame	U/L — FF	U/L — FF	U/L — FF
30 Minute Fire Rated Wood Door x Fire Rated Hollow Metal Frame	U/L — FF	U/L — FF	U/L — FF
30 Minute Fire Rated Metal Door x Fire Rated Hollow Metal Frame	U/L — FF	U/L — FF	U/L — FF
45 Minute Fire Rated Wood Door x Fire Rated Hollow Metal Frame	U/L — FF	U/L — FF	U/L — FF
45 Minute Fire Rated Metal Door x Fire Rated Hollow Metal Frame	U/L — FF	U/L — FF	U/L — FF
90 Minute Fire Rated Wood Door x Fire Rated Hollow Metal Frame	U/L — Stud	U/L — Stud	U/L — Stud
90 Minute Fire Rated Metal Door x Fire Rated Hollow Metal Frame	U/L — FF	U/L — FF	U/L — FF
3 Hour Fire Rated Hollow Metal Door x Fire Rated Hollow Metal Frame	U/L — Stud	U/L — Stud	U/L — Stud

- 780 Series Roton Continuous Geared Hinges meet requirements for positive pressure UL10C, UL10B and UBC7-2 Part 1
- 780 Series Roton Continuous Geared Hinges are approved for ANSI A156.26 Grade 1 for 150 lb. doors
- 780 Series Roton heavy duty hinges are approved for ANSI A156.26 Grade 1 for 300 lb. doors
- 780-112 Roton Continuous Geared Hinge is Warnock-Hersey certified in accordance with ANSI A250.13 Severe Windstorm Resistant Components

Roton Continuous Geared Hinges



General Information

Standard Lengths

Roton Continuous Geared Hinge standard lengths are for 6'8" doors - 79", for 7' doors - 83", for 7'2" doors - 85", for 8' doors - 95" and for 10' doors - 119", for convenience in application to nominal doors. This provides for threshold clearance, head clearance and door height allowances for carpeting. Other lengths may be ordered as non-standard items.

Roton Continuous Geared Hinges are always installed flush with the top edge of the door. No more than 1/16" (1.5 mm) to 3/32" (2 mm) head clearance is recommended.

Where many net heights are likely to appear on the same job, group the sizes to 1/2" (13 mm) increments to be consistent in appearance. Generally, up to 1/2" (13 mm) of door heel exposure is acceptable, but all Roton Continuous Geared Hinges should be within 1" (25.4 mm) of the net door height.

Field Modifications

While Roton Continuous Geared Hinges can be field cut, any product modifications may void all warranties. Should in-the-field modifications be required, cut only from bottom of hinge. Do not cut through bearings or screw holes. When cutting electric hinges it is extremely important to clamp both hinge leaves securely to prevent hinge "chatter" which can damage the hinge's internal wiring. Consult the St. Louis technical team before proceeding.

Template Hinges

Hager Companies has developed templated hole patterns for Roton Continuous Geared Hinge models in standard lengths. Drawings are available upon request by contacting Hager Companies Customer Service or accessing the Hager Companies website at www.hagerco.com. Due to normal variances inherent in the manufacturing process, Roton custom length hinges are deemed by Hager Companies to be non-templated.

Standard Finishes

Roton Continuous Geared Hinges are available in either clear satin anodized aluminum Alcoa 202-R1 (similar to US28) or in a dark bronze exterior anodized coating Alcoa 204-R1.

Special Anodizing

Hager Companies can supply unfinished materials to selected finishers for special projects which require unusual colors, but will require that final assembly be completed by Hager Companies. Because of special non-removable metal coatings applied to all hinges during assembly, users are cautioned against attempting to refinish any Roton product. Roton Continuous Geared Hinges are available in various special colors including black, gold, and other special anodized finishes with fasteners to match. All hinges ordered in special colors should be ordered at the same time to guarantee finish uniformity. Supply color chip for best match.

Painted Hinges

Hager Companies can supply unfinished materials to selected finishers for special projects which require unusual colors or coatings, but will require that final assembly be completed by Hager Companies. Because of special non-removable metal coatings applied to all hinges during assembly, users are cautioned against attempting to refinish any Roton product.

Painted Cover Channels

Painted Roton Cover Channels in Bone White are offered as a standard stock color option. This is only available on the standard Roton cover channel.

Polished Cover Channels

Any Roton Continuous Geared Hinge may be ordered with a polished clear cover channel (similar to US26) to complement clear anodized hinge leaves or a polished gold cover channel (similar to US3) to complement satin gold anodized hinge leaves.

Special Cover Channels

Special covers for rounded, fluted or decorative effects may be ordered. Not available for hinges with electrical modifications



Rounded Back



Fluted Back

1/2" wide insert



Decorative Back

Roton Cover Channel Compatibility

Hinge Model	Flat FBCC	Rounded RBCC	Fluted FLCC	Decorative DBCC
750-134	•	•	•	•
750-138	•	•	•	•
780-041	•	•		
780-045	•	•		
780-046	•	•		
780-053	•	•		
780-054	•	•		
780-057	•	•		
780-110	•	•	•	•
780-111	•	•	•	•
780-112	•	•	•	•
780-113	•	•	•	•
780-114	•	•		
780-155	•	•		
780-157	•			
780-208	•		•	•
780-210	•	•		
780-211	•	•		
780-213	•	•		
780-224	•	•	•	•
780-226	•	•	•	•
780-235	•	•	•	•
780-257	•			
780-259	•	•		
780-300	•			



Roton Continuous Geared Hinges

General Information

Extra Long Hinges

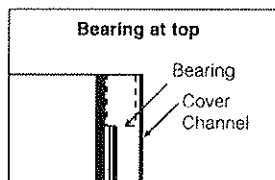
Hager Companies manufactures hinges over 119" long as two separate lengths with a staggered joint for onsite connection. Roton will select hinge segment lengths from standard sizes for best economics in relation to quantity required. Hanging specifications are required to position the cuts inconspicuously and to finish symmetrical pairs in double door applications.

Dutch Door Hinges

Hager Companies will prepare any of its hinge models for a dutch door application. The frame leaf is furnished as a continuous extrusion and the door leaf is cut to fit the dutch door heights specified. Upper and lower door leaves are prepped for extra screws. Hanging, overall net door height, amount of clearance between the top and bottom doors, their individual heights and door and frame materials should be clearly specified.

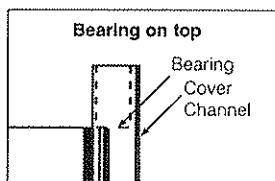
Bearing At Top

This application allows for the bearing to be set at the very top of the channel cover. The cover channel is flush with the top of the geared hinge, preventing any obstructions or debris to be inserted in the top channel.



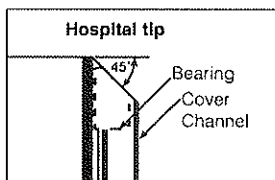
Bearing On Top

This application allows for the bearing to be set at the very top of the extended channel cover. The cover channel is extended the depth of the bearing and projects beyond the top edge of the hinge by the thickness of the bearing. This modification prevents any obstructions or debris from being inserted in the top of the channel.



Hospital Tip

Concealed models only can be prepared with a cover channel tapered at 45° angle at the top of the hinge. These are ideal for use in hospitals and correctional facilities to help provide a clean and safe environment. Please consult the sales office for available models.



Tamper Resistant Hinge

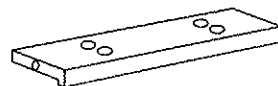
This application is intended for use in hospital psychiatric areas and places of high security. The hinge is prepared with a hospital tip (concealed models only) and every other bearing is supplied with a set screw to lock against the inside of the cover channel for additional security.

Bearing Replacement Kits

Available in standard or heavy duty and in Clear Anodized or Dark Bronze Anodized finish for 780 and 1200 Series Roton.

Special Holes

Any hinge may be ordered with special hole locations for unusual frame or door conditions. Please provide specifications for each leaf.



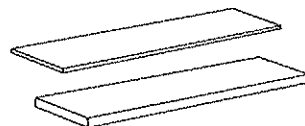
Marking Jigs

Marking jigs are available to locate the centers of the top end frame screws. These jigs must be ordered at the same time as the hinges to ensure fabrication accuracy.



Center Punches

Self-Centering punches are available for #12 countersunk screws that are supplied. To make sure screw heads seat properly, accurate center punching is required.



1/16" x 1 1/2" Wide x 7' or x 10' Long
1/8" x 1 1/2" Wide x 7' or x 10' Long

Shim Stock

For clearance between the door and frame that may be excessive, a continuous shim is helpful (applied behind the frame leaf only). Anodized aluminum extrusions are supplied with no holes.

Item Marking

Marking and special packaging for job-site identification.

Replacement Moldings

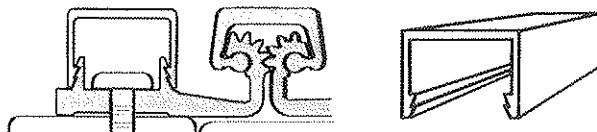
780-210M

Replacement door leaf molding for 780-210, 780-210HD, 780-211,



780-211HD, 780-213, 780-213HD, 780-045, 780-045HD, 780-046, 780-046HD. Furnished with Allen head set screw and wrench. Shipped in standard lengths for trimming in the field.

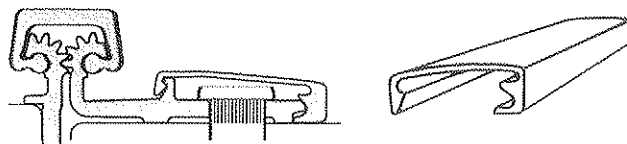
780-247M



Replacement frame leaf molding for 780-157, 780-157HD, 780-257, 780-257HD. Shipped in standard lengths for trimming in the field.

780-052M

Replacement door leaf molding for 780-053, 780-053HD, 780-054, 780-054HD, 780-155, 780-155HD, 780-057, 780-057HD, 780-157, 780-157HD, 780-257, 780-257HD, 780-259, 780-259HD. Furnished with Allen head set screw and wrench. Shipped in standard lengths for trimming in the field.



Roton Continuous Geared Hinges



General Information

Fasteners

Hager Companies uses custom made, carefully engineered, and thoroughly tested fasteners exclusively. Each fastener is designed for ease of use as well as durability. Appropriate fasteners are furnished with each hinge, together with installation instructions for typical metal or wood doors and frames. **The standard screw pack includes self-drilling screws; if wood screws are required, please specify in the ordering process.**

Fasteners for use with hinges in the 750 and 780 Series Metal Doors or Frames (Undercut Head Phillips Countersunk Screws): Two types of screws are available for metal doors and frames: the self-drilling screw (with drill point tip) and the thread forming screw (no tapping necessary). The #12-24 x 1 1/16" self-drilling screw has a machine thread in the screw shank. The #12-24 x 1 3/32" thread-forming screw has a machine thread in the screw shank.

The standard screw pack contains #12-24 self-drilling machine thread. This screw has a hardened steel drill point built into the end of the screw, allowing it to be installed without a pre-drilled hole if the metal thickness is no more than 1/8" (3.2 mm). It forms its own threads as the screw is drilled into the door or frame. It is longer than most screws of the type because of the built-in drill point.

When installing the self-drilling screw, make certain that the installer is familiar with the proper use and torque settings of a screw gun. Proper center-punching is extremely important with self-drilling screws. If center-punching is omitted or incorrectly done, the screw will "walk" in the same way as a drill bit, resulting in cocked screw heads and improperly closing hinge leaves.

The optional self-threading screw is typically used on grout filled frames to prevent bowing of the frame. This screw has a short tapered section at the tip. A drilled pilot hole (Range: 0.173" to 0.185") is required prior to tapping.

Either of these screws may be used for the attachment of Roton Continuous Geared Hinges to metal doors or frames, generally without reinforcement except in thin aluminum or with doors of very heavy weight or anticipated abuse. Both types require centerpunching to ensure that the screw seats properly in the hinge leaf. Self-centering countersinking center-punches are available.

In all cases, care should be taken to ensure that no drill chips build up behind the hinge. It is best to premark the holes and drill for self-threading screws with the hinge removed, or hold the hinge very tightly against the door or frame when using the self-drilling screws.

Hinges normally requiring sex bolts will be furnished with suitable mounting holes. Blank leaves, special countersinking or door fastening with pan-head screws are available upon request.

If special fasteners are required, customers must supply them except upon prior agreement. Please consult the factory for alternate fastener recommendations.

Sex Bolts (Thru-Bolts)

On all applicable surface-mounted hinges, sex bolt sets are furnished in the hardware package together with a transfer punch for accurate marking of the 3/8" (10 mm) drilled holes required. The 1/4"-20 bolt has a 3/8" (10 mm) shoulder under a 9/16" (14 mm) pan head so that it can be reversed for exterior in-swing doors or for additional security.

Roton sex bolts are intentionally designed to be shorter than the door thickness for proper clamping action with doors of slightly varying thickness and gauge in the 1" to 2 1/2" (63.5 mm) range. Unless otherwise requested, bolts suitable for the 1 3/8" (35 mm) to 1 3/4" (45 mm) range will be shipped. Shorter or longer bolts may be requested. Bolts which are outside the door thickness range of 1" (25.4 mm) to 2 1/2" (63.5 mm) must be provided by the installer.



Roton Continuous Geared Hinges

General Information

DOOR AND FRAME DIMENSIONING

Half Surface Models

780-045, 780-045HD, 780-046, 780-046HD, 780-053, 780-053HD, 780-054, 780-054HD, 780-155, 780-155HD, 780-211HD, 780-213, 780-213HD, 780-259, 780-259HD, 780-300HD (Leaf thickness clearance not required for 780-300HD)

Designed primarily for work involving new doors and frames, one leaf concealed and one leaf surface mounted. They can also be used on retrofit work where a new door can be ordered to fit an existing frame, the existing door is made of wood and can be reduced in size to accommodate the $\frac{1}{8}$ " (3.2 mm) leaf thickness, or the frame is to be replaced and can be furnished with an oversized header.

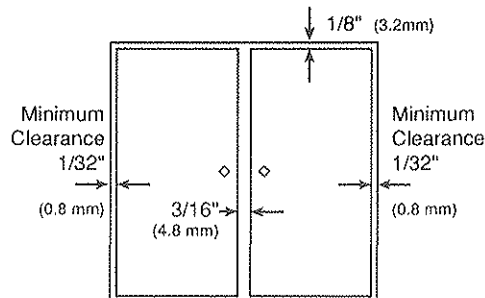
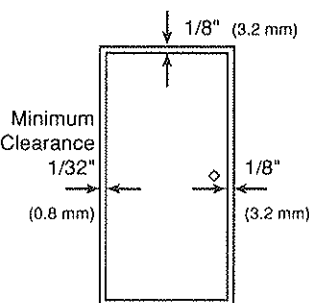
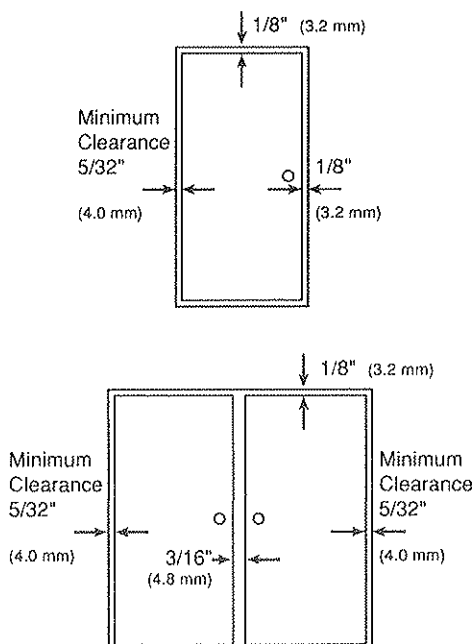
Clearance required as follows:

Single Doors (Square and Beveled Edge)

A. Leaf thickness	$\frac{1}{8}$ "	3.2 mm
B. Additional allowance for frame irregularities	$\frac{1}{32}$ "	0.8 mm
C. Lockside clearance for single door	$\frac{1}{8}$ "	3.2 mm
Total	$\frac{9}{32}$"	7.2 mm

Pairs of Doors (Square and Beveled Edge)

A. Leaf thickness	$\frac{1}{8}$ "	3.2 mm
B. Additional allowance for frame irregularities	$\frac{1}{32}$ "	0.8 mm
C. Edge to edge clearance (recommended)	$\frac{3}{16}$ "	4.8 mm
D. Second allowance for frame irregularities	$\frac{1}{32}$ "	0.8 mm
E. Second leaf thickness	$\frac{1}{8}$ "	3.2 mm
Total	$\frac{1}{2}$"	12.8 mm



DOOR AND FRAME DIMENSIONING

Full Surface Models

780-057, 780-057HD, 780-157, 780-157HD, 780-210, 780-210HD, 780-257HD

The above models are designed for retrofit applications and require no special dimensioning. Full Surface models are designed to be mounted to the exposed surface of the door and frame. No additional clearance is required except for door and frame painting.

Clearance required as follows:

Single Doors (Square and Beveled Edge)

A. Additional allowance for frame irregularities	$\frac{1}{32}$ "	0.8 mm
B. Lockside clearance for single door	$\frac{1}{8}$ "	3.2 mm
Total	$\frac{5}{32}$"	4.0 mm

Pairs of Doors (Square and Beveled Edge)

A. Additional allowance for frame irregularities	$\frac{1}{32}$ "	0.8 mm
B. Edge to edge clearance (recommended)	$\frac{3}{16}$ "	4.8 mm
C. Second allowance for frame irregularities	$\frac{1}{32}$ "	0.8 mm
Total	$\frac{1}{4}$"	6.4 mm

Roton Continuous Geared Hinges

General Information

DOOR AND FRAME DIMENSIONING

Concealed Models

750-134, 750-138, 780-110, 780-110HD, 780-111, 780-111HD, 780-111LL, 780-112, 780-112HD, 780-112LL, 780-224, 780-224HD, 780-224LL, 780-226, 780-226HD, 780-226LL, 780-235HD. The following are not recommended for doors with beveled edged applications – 780-041, 780-041HD and 780-041LL.

Designed primarily for work involving new doors and frames, these models have parallel, fully concealed leaves. They can also be used on retrofit work where a new door can be ordered to fit an existing frame, the existing door is made of wood and can be reduced in size to accommodate the 5/16" (7.9 mm) hinge thickness, or the frame is to be replaced and can be furnished with an oversized header.

Clearance required as follows:

Single Doors (Square Edged)

A. Hinge thickness*	5/16"	7.9 mm
B. Additional allowance for frame irregularities	1/32"	0.8 mm
C. Lockside clearance for single door	1/8"	3.2 mm
Total	15/32"	11.9 mm

Single Doors (Beveled Edged)

A. Hinge thickness*	5/16"	7.9 mm
B. Additional allowance for frame irregularities	1/32"	0.8 mm
C. Lockside clearance for single door	1/8"	3.2 mm
D. Allowance for beveled edge	1/32"	0.8 mm
Total	1/2"	12.7 mm

Pairs of Doors (Square Edged)

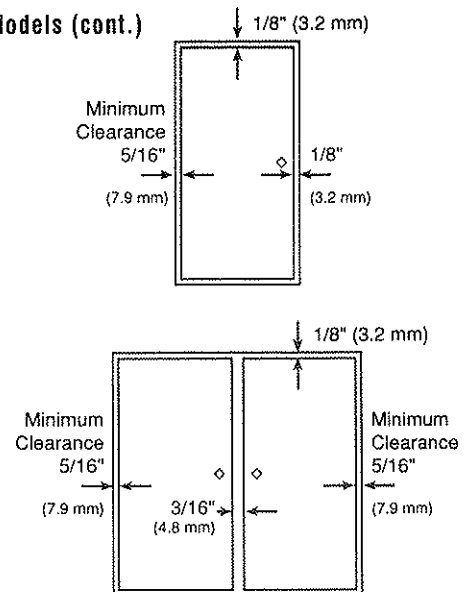
A. Hinge thickness*	5/16"	7.9 mm
B. Additional allowance for frame irregularities	1/32"	0.8 mm
C. Edge to edge clearance (recommended)	3/16"	4.8 mm
D. Second allowance for frame irregularities	1/32"	0.8 mm
E. Second hinge thickness*	5/16"	7.9 mm
Total	7/8"	22.2 mm

Pairs of Doors (Beveled Edged)

A. Hinge thickness*	5/16"	7.9 mm
B. Allowance for beveled edge	1/32"	0.8 mm
C. Additional allowance for frame irregularities	1/32"	0.8 mm
D. Edge to edge clearance (recommended)	3/16"	4.8 mm
E. Second allowance for frame irregularities	1/32"	0.8 mm
F. Second allowance for beveled edge	1/32"	0.8 mm
G. Second hinge thickness*	5/16"	7.9 mm
Total	15/16"	23.8 mm

* See exceptions

Concealed Models (cont.)



Concealed Model Exceptions

780-113, 780-113HD

Single Doors (Square Edged)

A. Hinge thickness	13/16"	20.6 mm
B. Additional allowance for frame irregularities	1/32"	0.8 mm
C. Lockside clearance for single door	1/8"	3.2 mm
Total	31/32"	24.6 mm

Single Doors (Beveled Edged)

A. Hinge thickness	13/16"	20.6 mm
B. Additional allowance for frame irregularities	1/32"	0.8 mm
C. Lockside clearance for single door	1/8"	3.2 mm
D. Allowance for beveled edge	1/32"	0.8 mm
Total	1"	12.8 mm

Pairs of Doors (Square Edged)

A. Hinge thickness	13/16"	20.6 mm
B. Additional allowance for frame irregularities	1/32"	0.8 mm
C. Edge to edge clearance (recommended)	3/16"	4.8 mm
D. Second allowance for frame irregularities	1/32"	0.8 mm
E. Second hinge thickness	13/16"	0.6 mm
Total	17/8"	47.6 mm

Pairs of Doors (Beveled Edged)

A. Hinge thickness	13/16"	20.6 mm
B. Allowance for beveled edge	1/32"	0.8 mm
C. Additional allowance for frame irregularities	1/32"	0.8 mm
D. Edge to edge clearance (recommended)	3/16"	4.8 mm
E. Second allowance for frame irregularities	1/32"	0.8 mm
F. Second allowance for beveled edge	1/32"	0.8 mm
G. Second hinge thickness	13/16"	20.6 mm
Total	115/16"	49.2 mm



Roton Continuous Geared Hinges

General Information

DOOR AND FRAME DIMENSIONING

Concealed Model Exceptions (cont.)

780-114, 780-114HD

Single Doors (Square Edged)

A. Hinge thickness	15/16"	23.8 mm
B. Additional allowance for frame irregularities	1/32"	0.8 mm
C. Lockside clearance for single door	1/8"	3.2 mm
Total	13/32"	27.8 mm

Pair of Doors (Square Edged)

A. Hinge thickness	15/16"	23.8 mm
B. Additional allowance for frame irregularities	1/32"	0.8 mm
C. Edge to edge clearance (recommended)	3/16"	4.8 mm
D. Second allowance for frame irregularities	1/32"	0.8 mm
E. Second hinge thickness	15/16"	23.8 mm
Total	21/8"	54.0 mm

1200-600XHD, 1200-650XHD

Single Doors (Square Edged)

A. Hinge thickness	15/32"	11.9 mm
B. Additional allowance for frame irregularities	1/32"	0.8 mm
C. Lockside clearance	1/8"	3.2 mm
Total	5/8"	15.9 mm

Single Doors (Beveled Edged)

A. Hinge thickness	15/32"	11.9 mm
B. Additional allowance for frame irregularities	1/32"	0.8 mm
C. Lockside clearance for single door	1/8"	3.2 mm
D. Allowance for beveled edge	1/32"	0.8 mm
Total	21/32"	16.7 mm

Pair of Doors (Square Edged)

A. Hinge thickness	15/32"	11.9 mm
B. Additional allowance for frame irregularities	1/32"	0.8 mm
C. Edge to edge clearance (recommended)	3/16"	4.8 mm
D. Second allowance for frame irregularities	1/32"	0.8 mm
E. Second hinge thickness	15/32"	11.9 mm
Total	13/16"	30.2 mm

Pair of Doors (Beveled Edged)

A. Hinge thickness	15/32"	11.9 mm
B. Allowance for beveled edge	1/32"	0.8 mm
C. Additional allowance for frame irregularities	1/32"	0.8 mm
D. Edge to edge clearance (recommended)	3/16"	4.8 mm
E. Second allowance for beveled edge	1/32"	0.8 mm
F. Second hinge thickness	15/32"	11.9 mm
Total	11/4"	31.8 mm

780-208, 780-208HD

Single Doors (Square Edged)

A. Hinge thickness	1/2"	2.7 mm
B. Additional allowance for frame irregularities	1/32"	0.8 mm
C. Lockside clearance for single door	1/8"	3.2 mm
Total	21/32"	16.7 mm

Single Doors (Beveled Edged)

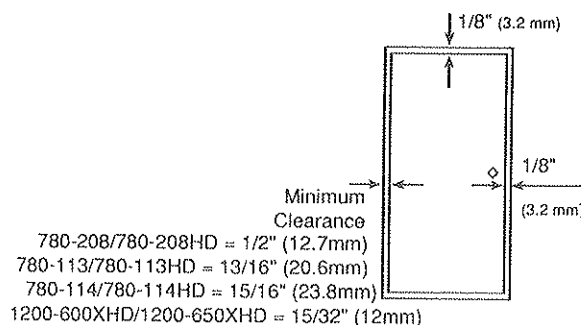
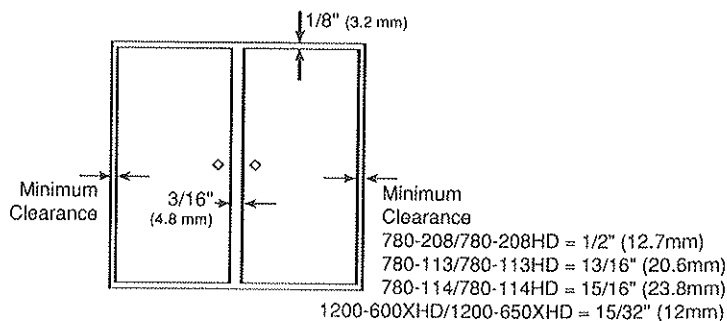
A. Hinge thickness	1/2"	12.7 mm
B. Additional allowance for frame irregularities	1/32"	0.8 mm
C. Lockside clearance for single door	1/8"	3.2 mm
D. Allowance for beveled edge	1/32"	0.8 mm
Total	11/16"	17.5 mm

Pair of Doors (Square Edged)

A. Hinge thickness	1/2"	2.7 mm
B. Additional allowance for frame irregularities	1/32"	0.8 mm
C. Edge to edge clearance (recommended)	3/16"	4.8 mm
D. Second allowance for frame irregularities	1/32"	0.8 mm
E. Second hinge thickness	1/2"	12.7 mm
Total	11/4"	31.8 mm

Pair of Doors (Beveled Edged)

A. Hinge thickness	1/2"	12.7 mm
B. Allowance for beveled edge	1/32"	0.8 mm
C. Additional allowance for frame irregularities	1/32"	0.8 mm
D. Edge to edge clearance (recommended)	3/16"	4.8 mm
E. Second allowance for frame irregularities	1/32"	0.8 mm
F. Second allowance for beveled edge	1/32"	0.8 mm
G. Second hinge thickness	1/2"	2.7 mm
Total	15/16"	33.3 mm



Roton Continuous Geared Hinges



General Information

ELECTRIC HINGE MODIFICATIONS

Exposed Electric Contacts:

- Transfers power to door in closed position
- To order, use symbol "E" plus the number of contacts required as a suffix
- Must have at least two (2) contacts to transfer power
- Example: 780-112HD 85" Clear E4
- Specify handing and the dimension from the top edge of the door to the centerline of the electric contact location
- Templates regarding location of contacts available upon request

Exposed Electric Switches:

- Miniature push button switch is incorporated in the hinge frame leaf to monitor position of the door
- Three 12" wire leads
- To order, use symbol "E1S" as a suffix
- Each monitoring hinge only needs one E1S switch
- Example: 780-112HD 85" Clear E1S
- Specify handing and the dimension from the top edge of the door to the centerline of the electric switch location
- Templates regarding location of contact switch available upon request

Concealed Electric Through-Wire:

- Transfers power discreetly from building to door hardware
- Four, six, eight or ten wire continuous electric conductors
- To order, use symbol "ETW" plus the number of wire leads, 12" per side required as a suffix
- Example: 780-112HD 85" Clear ETW - 4
- Specify handing and the dimension from the top edge of the door to the centerline of electric through-wire location
- Templates regarding location of through-wires available upon request

Removable Electric Through-Wire:

- Transfers power discreetly from building to door hardware
- 4" removable ETW module can easily be removed for adjustment or service
- To order, use symbol "RETW"
- Available on heavy duty models only
- Example: 780-112HD 85" Clear RETW
- Specify handing and the dimension from the top edge of the door to the centerline of electric monitoring location
- To order 4" removable module only, use component number
- Templates regarding location of module available upon request

Concealed Electric Monitoring:

- Miniature switch is incorporated into the frame leaf
- Three 12" wire leads
- To order, use symbol "EMN", as a suffix
- Example: 780-224HD 119" Bronze EMN
- Specify handing and the dimension from the top edge of the door to the centerline of electric monitoring location
- Templates regarding location of monitoring switch available upon request

Concealed Electric Through-Wire and Monitoring:

- This combines the continuous electric conductors and the miniature switch to provide both power transfer and monitoring
- Four, six, eight or ten continuous electric conductors
- Miniature switch is incorporated into the frame leaf
- To order, use symbol "ETM" plus the number of wires required as a suffix
- Example: 780-224LL 85" Bronze ETM - 4
- Specify handing and the dimension from the top edge of the door to the centerline of each electric modification location
- Templates regarding location of monitoring switch, available upon request

Von Duprin EPT 2 or EPT 10 Electric Power Transfer Preparation

- Hinge leaf cutout to accommodate power transfer device
- Specify handing and the dimension from the top edge of the door to the centerline of the power transfer location

Special Electric Modifications and EPT locations may require additional charges if screw holes have to be moved. Contact Hager Companies Customer Service for charges. Please feel free to contact the Hager Companies technical team for further information pertaining to electric modifications.

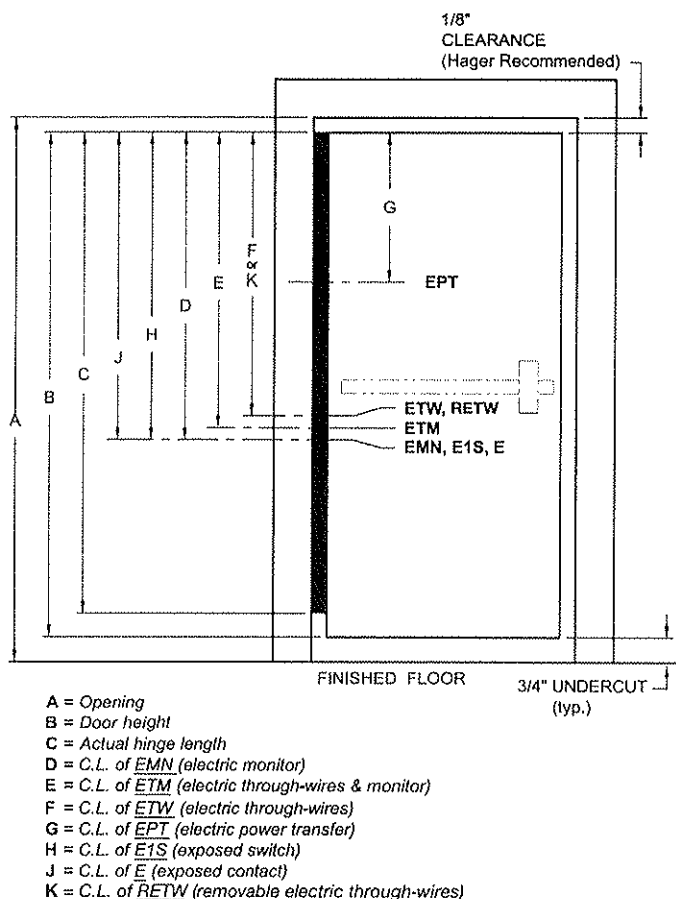
Mortar Box - 430

- Serves as a mortar shield
- Overall dimensions: 9" (229 mm) length with tabs, 7" (178 mm) inside, 1 3/4" x 1 3/4" (45 x 45 mm) inside dimension
- Galvanized steel 0.040" (1 mm)
- Top and bottom knockouts for standard conduit fittings



Hager Continuous Geared Hinges

General Information



ELECTRIC HINGE MODIFICATIONS

	A	B	C	D	E	F	G	H	J	K
79 SD	80"	79 1/8"	78 11/16"	42 1/2"	41 1/4"	40"	24 1/2"	42 1/2"	42 1/2"	-
79 HD	80"	79 1/8"	78 11/16"	42 1/2"	40 9/8"	38 3/4"	24 1/2"	42 1/2"	42 1/2"	41 7/8"
83 SD	84"	83 1/8"	83"	46 1/2"	44 5/8"	42 3/4"	28 7/16"	46 1/2"	46 1/2"	-
83 HD	84"	83 1/8"	83"	46 1/2"	45 1/4"	44"	28 7/16"	46 1/2"	46 1/2"	44 1/16"
85 SD	86"	85 1/8"	85"	48 1/2"	47 1/4"	46"	30 7/16"	48 1/2"	48 1/2"	-
85 HD	86"	85 1/8"	85"	48 1/2"	46 5/8"	44 3/4"	30 7/16"	48 1/2"	48 1/2"	45 1/16"
95 SD	96"	95 1/8"	95 1/16"	59 3/4"	57 7/8"	56"	40 1/2"	59 3/4"	59 3/4"	-
95 HD	96"	95 1/8"	95 1/16"	59 3/4"	57 7/8"	56"	40 1/2"	59 3/4"	59 3/4"	56 1/2"
119 SD	120"	119 1/8"	119"	83 3/4"	81 7/8"	80"	64 3/8"	83 3/4"	83 3/4"	-
119 HD	120"	119 1/8"	119"	83 3/4"	81 7/8"	80"	64 3/8"	83 3/4"	83 3/4"	80"

For ease of ordering, Hager Companies has established standard locations for power transfer cutouts. All standard location dimensions are referenced from the top edge of the door to the centerline of the power transfer cutout. Please specify handing.

PART NUMBER	VON DUPRIN EPT 2 OR EPT 10 POWER TRANSFER PREPARATION	EXPOSED ELECTRIC CONTACTS	EXPOSED ELECTRIC SWITCHES	CONCEALED ELECTRIC THROUGH-WIRE	CONCEALED ELECTRIC MONITORING	CONCEALED ELECTRIC THROUGH-WIRE AND MONITORING	REMOVABLE ELECTRIC THROUGH-WIRE
750-134							
750-138							
780-041							
780-041HD							
780-041LL							
780-045	•						
780-045HD	•						
780-046	•						
780-046HD	•						
780-053	•						
780-053HD	•						
780-054	•						
780-054HD	•						
780-110	•		•	•			
780-110HD	•		•	•			
780-111	•	•	•	•	•	•	
780-111HD	•	•	•	•	•	•	•
780-111LL	•	•	•	•	•	•	
780-112	•	•	•	•	•	•	
780-112HD	•	•	•	•	•	•	•
780-112LL	•	•	•	•	•	•	
780-155							
780-155HD							
780-211HD							
780-224	•	•	•	•	•	•	
780-224HD	•	•	•	•	•	•	•
780-224LL	•	•	•	•	•	•	
780-226	•	•	•	•	•	•	
780-226HD	•	•	•	•	•	•	•
780-226LL	•	•	•	•	•	•	
780-235HD		•	•	•	•		

Roton Continuous Geared Hinges



Light Duty



Light Duty

Universal hinge used for a wide variety of applications including marine applications, wood cabinet construction, medical equipment, portable exhibits and displays, electronic cabinets, switchboxes, etc.

500-048

- Material: Aluminum 6063-T6 - 1/16" (1.5 mm) leaf thickness
 Clearance: 5/16" (8 mm)
 Fasteners: #8-18 x 3/4" Truss Head Phillips Tapping AB Zinc plated Steel. Painted to match. For sheet metal or wood applications.
 Length Options: Standard and custom (standard chart below)
 Special Features:
- Bearings spaced to distribute door weight evenly up to 50 lbs.
 - Can be used for vertical or horizontal applications
 - Alignment ribs for easy installation and proper hinge location
 - Optional nylon end plugs provide a seal for marine applications

Hinge Length - Inches		24	36	48	72
Hinge Length - cm		61.0	91.4	121.9	182.9
Door Screws	Std	6	9	12	18
Jamb Screws	Std	6	9	12	18



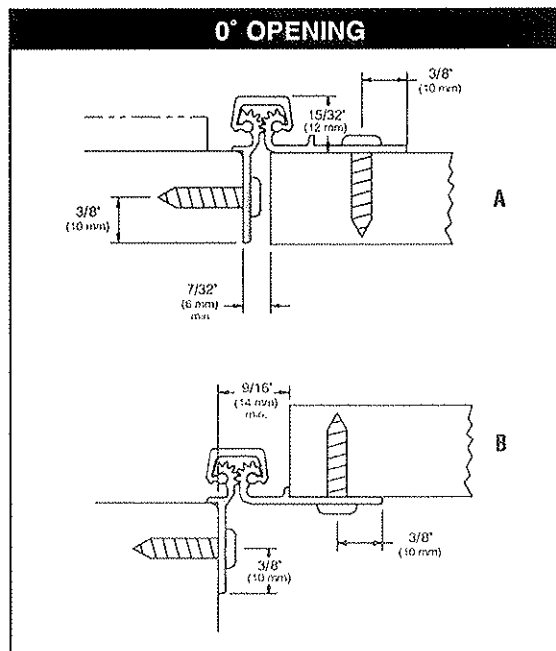
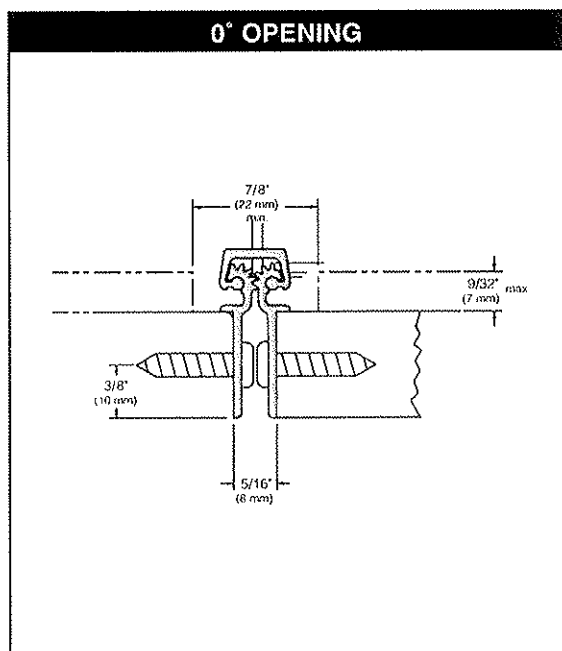
Light Duty

Universal hinge used for a wide variety of applications including marine applications, wood cabinet construction, medical equipment, portable exhibits and displays, electronic cabinets, switchboxes, etc.

500-200

- Material: Aluminum 6063-T6 - 1/16" (1.5 mm) leaf thickness
 Clearance: 7/32" (5.6 mm) minimum
 Fasteners: #8-18 x 3/4" Truss Head Phillips Tapping AB Zinc plated Steel. Painted to match. For sheet metal or wood applications. Shorter screws required for openings past 90° when applied as shown in "A" (not provided).
 Length Options: Standard and custom (standard chart below)
 Special Features:
- Bearings spaced to distribute door weight evenly up to 50 lbs.
 - Can be used for vertical or horizontal applications
 - Alignment ribs for easy installation and proper hinge location
 - Optional nylon end plugs provide a seal for marine applications

Hinge Length - inches		24	36	48	72
Hinge Length - cm		61.0	91.4	121.9	182.9
Door Screws	Std	6	9	12	18
Jamb Screws	Std	6	9	12	18





Hagerco Continuous Geared Hinges

Light Duty

Concealed Leaf



Light Duty

Universal hinge used for a wide variety of applications including marine applications, wood cabinet construction, medical equipment, portable exhibits and displays, electronic cabinets, switchboxes, etc.

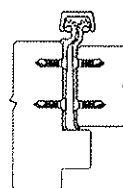
500-220

Material: Aluminum 6063-T6 - 1/16" (1.5 mm) nominal leaf thickness
Clearance: 1/32" (1 mm) minimum
Fasteners: #8-18 x 3/4" Truss Head Phillips Tapping AB Zinc plated Steel. Painted to match. For sheet metal or wood applications. Shorter screws required for 90° and 180° openings when applied as shown in 'B' (not provided). Shorter screws required for openings past 90° when applied as shown in 'C' (not provided).

Length Options: Standard and custom (standard chart below)

Special Features:

- Allows either inset or outset applications for recessed or surface mounting
- Bearings spaced to distribute door weight evenly up to 50 lbs.
- Can be used for vertical or horizontal applications
- Alignment ribs for easy installation and proper hinge location
- Optional nylon end plugs provide a seal for marine applications



Solid Core Wood Door

For medium frequency 1 3/4" solid core wood interior doors up to 100 lbs.

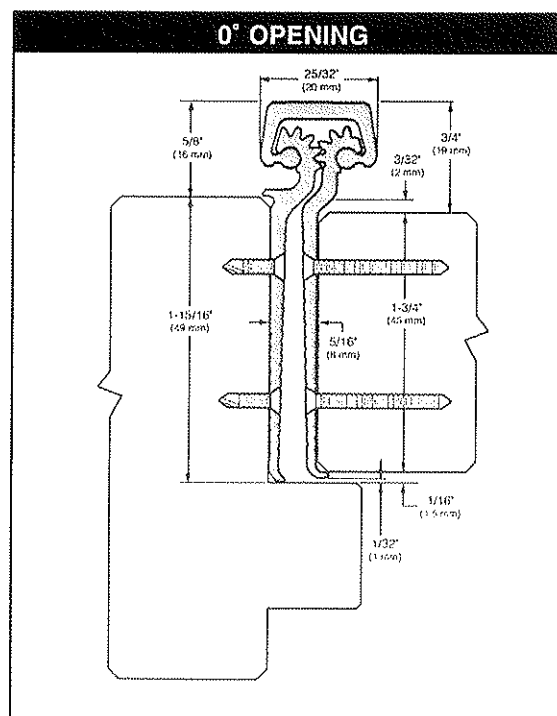
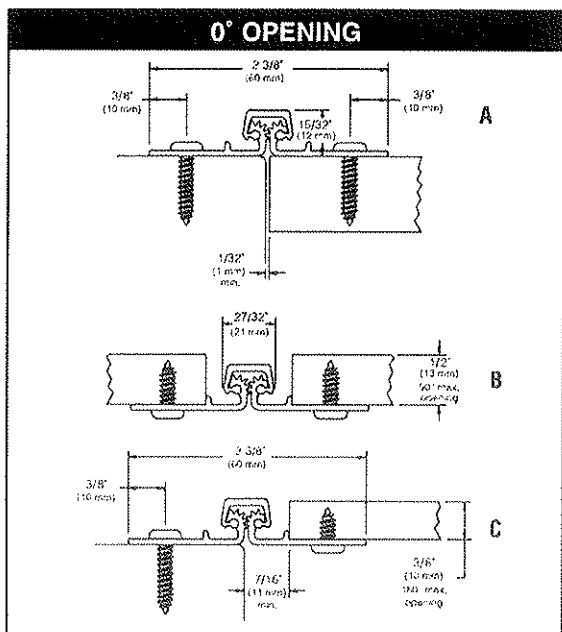
750-134

Clearance: 5/16" (8 mm) hinge side plus standard lockside clearance
Fasteners: Drill-Kwik® and wood screws
Length Options: Standard and Custom
Door Reinforcement: None required
Frame Reinforcement: None required
Special Features:

- Door edge protection lip
- Offset joint to clear casing
- Frame leaf alignment rib for proper hinge location

Hinge Length - inches		24	36	48	72
Hinge Length - cm		61.0	91.4	121.9	182.9
Door Screws	Std	6	9	12	18
Jamb Screws	Std	6	9	12	18

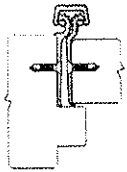
Hinge Length - Inches		79	83	85	95	119
Hinge Length - cm		200.7	210.8	215.9	241.3	302.3
Door Screws	Std	16	20	20	20	22
Jamb Screws	Std	16	20	20	20	22



Roton Continuous Geared Hinges



Concealed Leaf

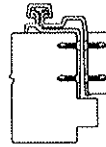


Solid Core Wood Door

For medium frequency 1 3/4" solid core wood interior doors up to 100 lbs.

750-138

- Clearance: 5/16" (8 mm) hinge side plus standard lockside clearance
- Fasteners: Drill-Kwik® and wood screws
- Length Options: Standard and Custom
- Door Reinforcement: None required
- Frame Reinforcement: None required
- Special Features:
- Door edge protection lip
 - Offset joint to clear casing
 - Frame leaf alignment rib for proper hinge location



Door of any Material - Standard and Heavy Duty 1 3/4" Doors

Standard Duty for medium frequency doors. Heavy Duty for high frequency doors.

780-041

780-041 HD

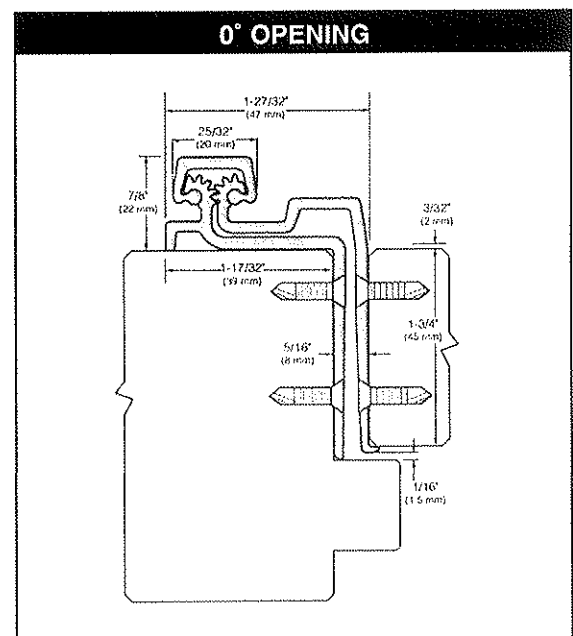
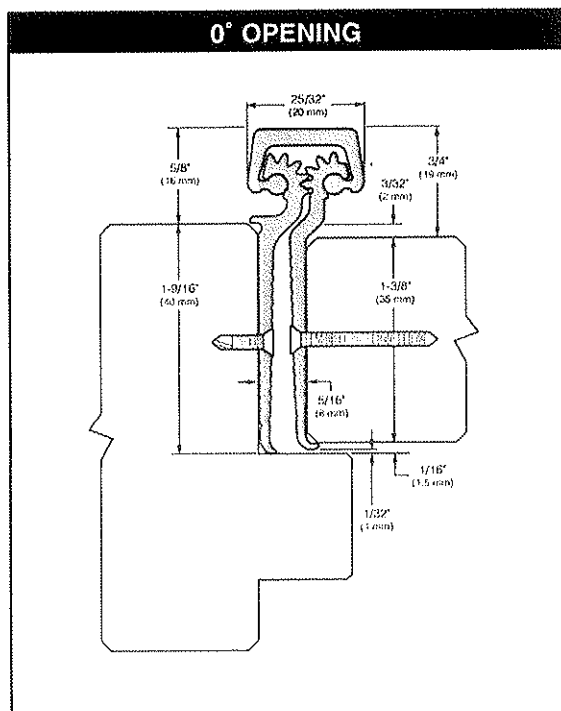
780-041 LL



- Clearance: 5/16" (8 mm) hinge side plus standard lockside clearance
- Fasteners: Drill-Kwik® screws
- Length Options: Standard and Custom
- Door Reinforcement: None required to 200 lbs. Heavier weight use 16 gauge channel
- Frame Reinforcement: None required to 200 lbs. Heavier weight use 16 gauge channel
- Fire Rating: Up to 3 hr. metal and 90 min. wood composite (with studs)
- Special Features:
- Lead lined model for hospital x-ray room doors with double row of screws to straddle lead (specify "LL")
 - Door edge protection lip
 - Swing-clear action and ADA compliant for classroom or patient room doors
 - Not recommended for doors with a beveled edge on the hinge side

Hinge Length - Inches	79	83	85	95	119
Hinge Length - cm	200.7	210.8	215.9	241.3	302.3
Door Screws	Std 10	12	12	14	16
Jamb Screws	Std 10	12	12	14	16

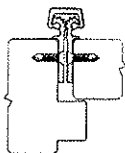
Hinge Length - Inches	79	83	85	95	119
Hinge Length - cm	200.7	210.8	215.9	241.3	302.3
Door Screws	Std	15	19	19	21
	HD	15	19	19	21
Jamb Screws	LL	32	36	36	42
	Std	15	19	19	21
Jamb Screws	HD	15	19	19	21
	LL	32	36	36	42





Roton Continuous Geared Hinges

Concealed Leaf



Door of any Material - Standard and Heavy Duty

Standard Duty for medium frequency doors. Heavy Duty for high frequency doors or heavy medium frequency doors.

780-110

780-110 HD

Clearance: $\frac{5}{16}$ " (8 mm) hinge side plus standard lockside clearance

Fasteners: Drill-Kwik® screws

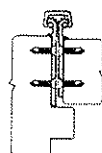
Length Options: Standard and Custom

Door Reinforcement: None required to 200 lbs. Heavier weight use 16 gauge channel

Frame Reinforcement: None required to 200 lbs. Heavier weight use 16 gauge channel

Fire Rating: Up to 3 hr. metal and 90 min. wood composite (with studs)

Special Features: Frame and door leaf alignment ribs for proper hinge and door location



Door of any Material - Standard and Heavy Duty

Standard Duty for medium frequency doors. Heavy Duty for high frequency doors or heavy medium frequency doors.

780-111

780-111 HD

780-111 LL

Clearance: $\frac{5}{16}$ " (8 mm) hinge side plus standard lockside clearance

Fasteners: Drill-Kwik® screws

Length Options: Standard and Custom

Door Reinforcement: None required to 200 lbs. Heavier weight use 16 gauge channel

Frame Reinforcement: None required to 200 lbs. Heavier weight use 16 gauge channel

Fire Rating: Up to 3 hr. metal and 90 min. wood composite (with studs)

Special Features: • Lead lined model for hospital x-ray room doors with double row of screws to straddle lead (Specify "LL")

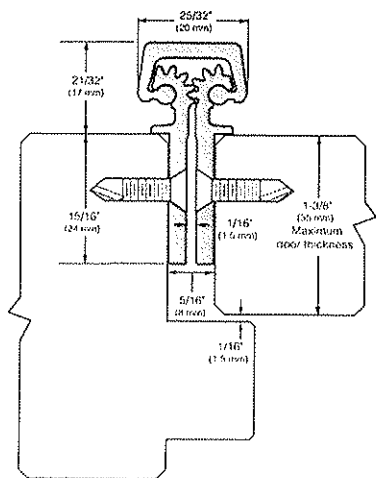
• Frame and door leaf alignment ribs for proper hinge and door location

• $\frac{1}{8}$ " (3 mm) inset

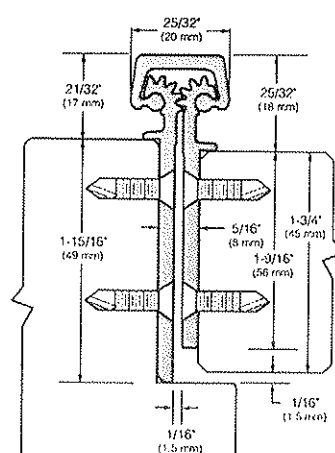
Hinge Length - Inches		79	83	85	95	119
Hinge Length - cm		200.7	210.8	215.9	241.3	302.3
Door Screws	Std	10	12	12	14	16
	HD	12	14	14	16	20
Jamb Screws	Std	10	12	12	14	16
	HD	12	14	14	16	20

Hinge Length - inches		79	83	85	95	119
Hinge Length - cm		200.7	210.8	215.9	241.3	302.3
Door Screws	Std	15	19	19	19	21
	HD	15	19	19	19	21
	LL	32	36	36	42	48
Jamb Screws	Std	15	19	19	19	21
	HD	15	19	19	19	21
	LL	32	36	36	42	48

0° OPENING

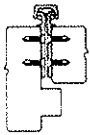


0° OPENING



Roton Continuous Geared Hinges

Concealed Leaf



Door of any Material - Standard and Heavy Duty

Standard Duty for medium frequency doors. Heavy Duty for high frequency doors or heavy medium frequency doors.

780-112*
780-112 HD
780-112 LL

Clearance: $\frac{5}{16}$ " (8 mm) hinge side plus standard lockside clearance

Fasteners: Drill-Kwik® screws

Length Options: Standard and Custom

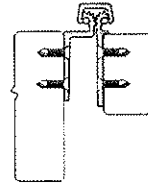
Door Reinforcement: None required to 200 lbs. Heavier weight use 16 gauge channel

Frame Reinforcement: None required to 200 lbs. Heavier weight use 16 gauge channel

Fire Rating: Up to 3 hr. metal and 90 min. wood composite (with studs)

Special Features:

- Lead lined model for hospital x-ray room doors with double row of screws to straddle lead (Specify "LL")
- Frame and door leaf alignment ribs for proper hinge and door location



Door of any Material - Standard and Heavy Duty

Standard Duty for medium frequency doors. Heavy Duty for high frequency doors or heavy medium frequency doors.

780-113
780-113 HD

Clearance: $\frac{13}{16}$ " (21 mm) hinge side plus standard lockside clearance

Fasteners: Drill-Kwik® screws

Length Options: Standard and Custom

Door Reinforcement: None required to 200 lbs. Heavier weight use 16 gauge channel

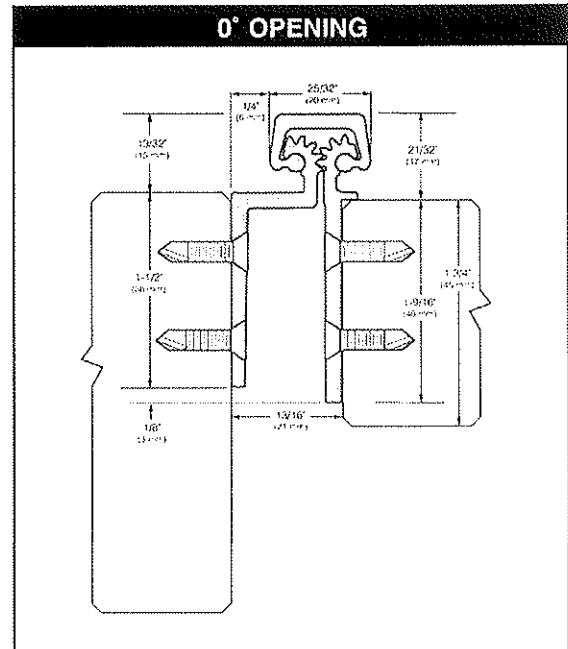
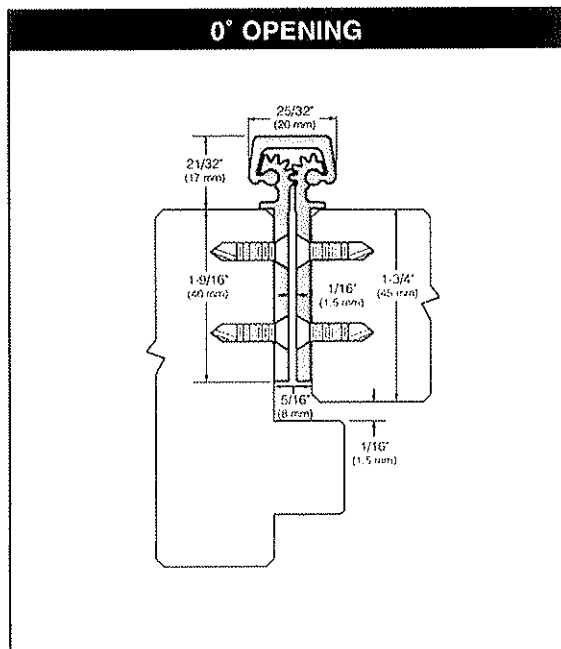
Frame Reinforcement: None required to 200 lbs. Heavier weight use 16 gauge channel

Special Features:

- "Safety Hinge" for kindergartens, nursing homes, daycares, etc. (when used without frame stop)
- Door leaf alignment rib for proper door location
- $\frac{1}{16}$ " (1.5 mm) inset

Hinge Length - Inches	79	83	85	95	119
Hinge Length - cm	200.7	210.8	215.9	241.3	302.3
Door Screws	Std	15	19	19	21
	HD	15	19	19	21
	LL	32	36	36	42
Jamb Screws	Std	15	19	19	21
	HD	15	19	19	21
	LL	32	36	36	42

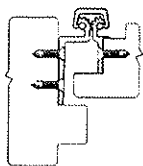
Hinge Length - Inches	79	83	85	95	119
Hinge Length - cm	200.7	210.8	215.9	241.3	302.3
Door Screws	Std	15	19	19	21
	HD	15	19	19	21
	LL	32	36	36	42
Jamb Screws	Std	14	12	12	14
	HD	14	18	18	20
	LL	32	36	36	42





Roton Continuous Geared Hinges

Concealed Leaf



Door of any Material - Standard and Heavy Duty

Standard Duty for medium frequency doors. Heavy Duty for high frequency doors or heavy medium frequency doors.

780-114

780-114 HD

Clearance: 15/16" (24 mm) hinge side plus standard lockside clearance

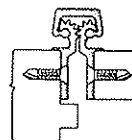
Fasteners: Drill-Kwik® screws

Length Options: Standard and Custom

Door Reinforcement: None required to 200 lbs. Heavier weight use 16 gauge channel

Frame Reinforcement: None required to 200 lbs. Heavier weight use 16 gauge channel

- Special Features:
- For deep inset or flush-with-frame (when using rabbeted frames) applications, center hung doors, heavy cabinets
 - For square edged doors on hinge side



Door of any Material - Standard and Heavy Duty

Standard Duty for medium frequency doors. Heavy Duty for high frequency doors or heavy medium frequency doors.

780-208

780-208 HD

Clearance: 1/2" (13 mm) hinge side plus standard lockside clearance

Fasteners: Drill-Kwik® screws

Length Options: Standard and Custom

Door Reinforcement: None required to 200 lbs. Heavier weight use 16 gauge channel

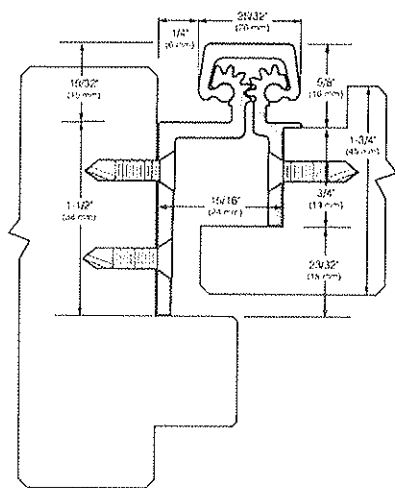
Frame Reinforcement: None required to 200 lbs. Heavier weight use 16 gauge channel

- Special Features:
- For millwork, toilet stall doors, windows, and rabbeted bi-fold doors
 - Frame and door leaf alignment ribs for proper hinge and door location

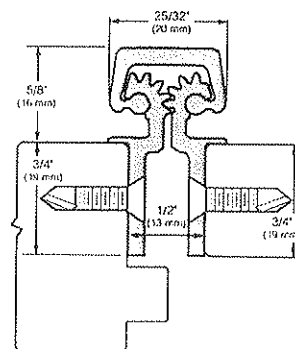
Hinge Length - inches		79	83	85	95	119
Hinge Length - cm		200.7	210.8	215.9	241.3	302.3
Door Screws	Std	10	12	12	14	16
	HD	12	14	14	16	20
Jamb Screws	Std	14	12	12	14	16
	HD	14	18	18	20	26

Hinge Length - Inches		79	83	85	95	119
Hinge Length - cm		200.7	210.8	215.9	241.3	302.3
Door Screws	Std	10	12	12	14	16
	HD	12	14	14	16	20
Jamb Screws	Std	10	12	12	14	16
	HD	12	14	14	16	20

0° OPENING



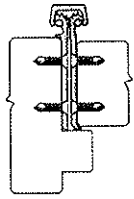
0° OPENING



Roton Continuous Geared Hinges



Concealed Leaf



Door of any Material - Standard and Heavy Duty - 1 3/4" Thick Doors

Standard Duty for medium frequency doors. Heavy Duty for high frequency doors or heavy medium frequency doors.

780-224

780-224 HD

780-224 LL

Clearance: 5/16" (8 mm) hinge side plus standard lockside clearance

Fasteners: Drill-Kwik® screws

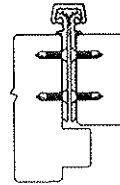
Length Options: Standard and Custom

Door Reinforcement: None required to 200 lbs. Heavier weight use 16 gauge channel

Frame Reinforcement: None required to 200 lbs. Heavier weight use 16 gauge channel

Fire Rating: Up to 3 hr. metal and 90 min. wood composite (with studs)

- Special Features:
- Lead lined model for hospital x-ray room doors with double row of screws to straddle lead (Specify "LL")
 - Door edge protection lip
 - Frame leaf alignment rib for proper hinge and door location
 - 3/32" (2 mm) inset



Door of any Material - Standard and Heavy Duty - 2" Thick Doors or Greater

Standard Duty for medium frequency doors. Heavy Duty for high frequency doors or heavy medium frequency doors.

780-226

780-226 HD

780-226 LL

Clearance: 5/16" (8 mm) hinge side plus standard lockside clearance

Fasteners: Drill-Kwik® screws

Length Options: Standard and Custom

Door Reinforcement: None required to 200 lbs. Heavier weight use 16 gauge channel

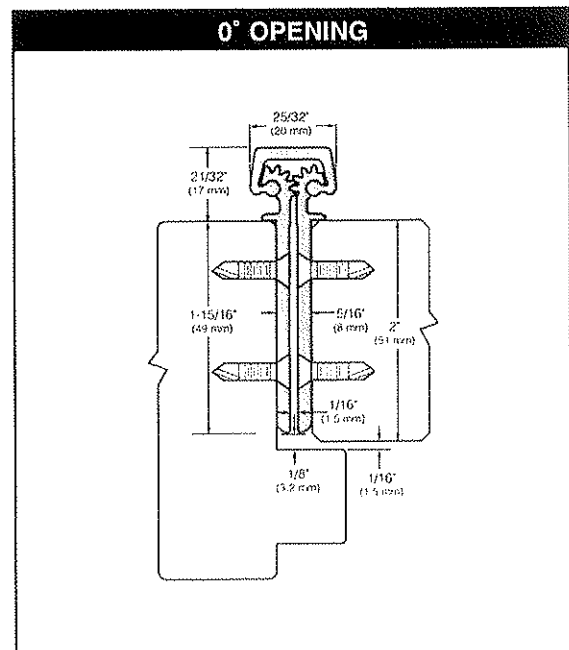
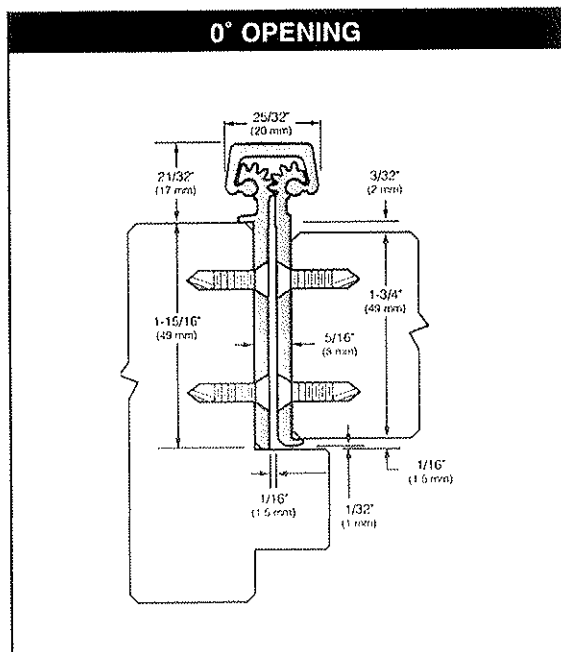
Frame Reinforcement: None required to 200 lbs. Heavier weight use 16 gauge channel

Fire Rating: Up to 3 hr. metal and 90 min. wood composite (with studs)

- Special Features:
- Lead lined model for hospital x-ray room doors with double row of screws to straddle lead (Specify "LL")
 - Frame and door leaf alignment ribs for proper hinge and door location

Hinge Length - Inches	79	83	85	95	119
Hinge Length - cm	200.7	210.8	215.9	241.3	302.3
Door Screws	Std	15	19	19	21
	HD	15	19	19	21
	LL	32	36	36	42
Jamb Screws	Std	15	19	19	21
	HD	15	19	19	21
	LL	32	36	36	42

Hinge Length - Inches	79	83	85	95	119
Hinge Length - cm	200.7	210.8	215.9	241.3	302.3
Door Screws	Std	15	19	19	21
	HD	15	19	19	21
	LL	32	36	36	42
Jamb Screws	Std	15	19	19	21
	HD	15	19	19	21
	LL	32	36	36	42

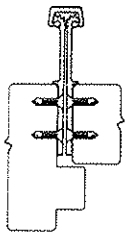




Roton Continuous Geared Hinges

Concealed Leaf

Full Surface



Door of any Material - Wide Throw - Heavy Duty

Heavy Duty for high frequency doors or heavy medium frequency doors

780-235 HD



Clearance: $5/16"$ (8 mm) hinge side plus allow an additional $1/32"$ to the standard lockside clearance

Fasteners: Drill-Kwik® screws

Length Options: Standard and Custom

Door Reinforcement: None required to 200 lbs. Heavier weight use 16 gauge channel

Frame Reinforcement: None required to 200 lbs. Heavier weight use 16 gauge channel

- Special Features:
- Wide Throw for applications that require extra clearance for door or frame
 - Frame and door leaf alignment ribs for proper hinge and door location
 - For square edged doors on hinge side



Door of any Material - Standard and Heavy Duty

Standard Duty for medium frequency doors. Heavy Duty for high frequency doors or heavy medium frequency doors.

780-057

780-057 HD

Clearance: $1/32"$ (1 mm) minimum recommended between doors

Fasteners: Sex bolts (Wood or machine screws available upon request)

Length Options: Standard and Custom

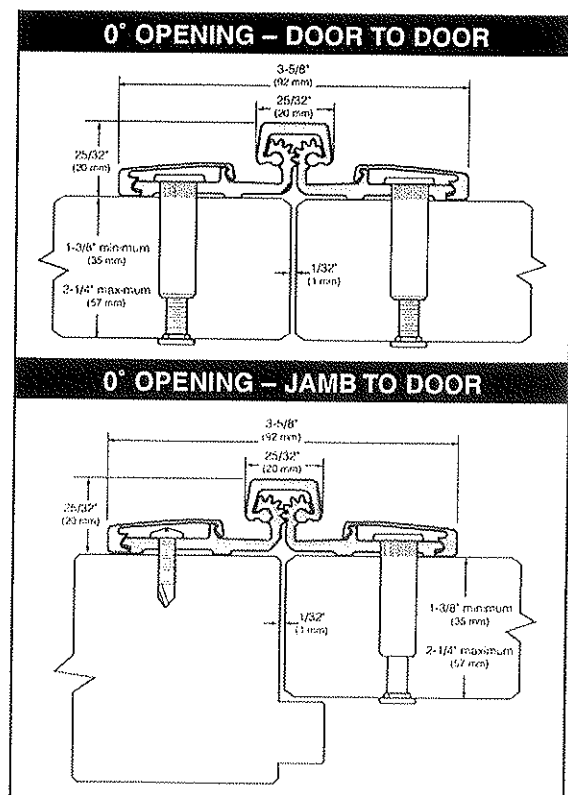
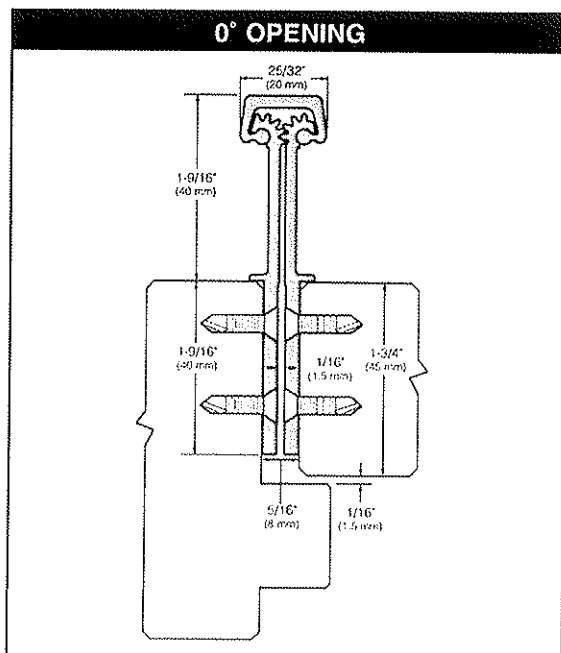
Door Reinforcement: None required

Fire Rating: Up to 3 hr. metal and 90 min. wood composite (with studs)

- Special Features:
- Bi-fold applications
 - Security moldings

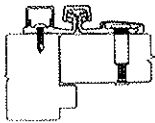
Hinge Length - Inches	79	83	85	95	119
Hinge Length - cm	200.7	210.8	215.9	241.3	302.3
Door Screws	HD 15	19	19	19	21
Jamb Screws	HD 15	19	19	19	21

Hinge Length - Inches	79	83	85	95	119
Hinge Length - cm	200.7	210.8	215.9	241.3	302.3
Door Screws	Std 8	8	8	9	10
Jamb Screws	HD 8	8	8	9	10



Roton Continuous Geared Hinges

Full Surface



Door of any Material - Standard and Heavy Duty

Standard Duty for medium frequency doors. Heavy Duty for high frequency doors or heavy medium frequency doors.

780-157
780-157 HD

Clearance: 1/32" (1 mm) minimum recommended for hinge side plus standard lockside clearance

Fasteners: Drill-Kwik® screws and Sex bolts

Length Options: Standard and Custom

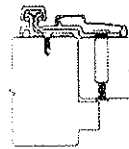
Door Reinforcement: None required

Frame Reinforcement: None required to 200 lbs. Heavier weight use 16 gauge channel

Fire Rating: Up to 3 hr. metal and 90 min. wood composite (with studs)

Special Features:

- For surface applications where frame face dimension is limited
- Security moldings
- 1/16" (1.5 mm) inset



Door of any Material - Standard and Heavy Duty

Standard Duty for medium frequency doors. Heavy Duty for high frequency doors or heavy medium frequency doors.

780-210
780-210 HD

Clearance: 1/32" (1 mm) minimum recommended for hinge side plus standard lockside clearance. 1 5/8" (41 mm) minimum frame face required plus 3/16" (5 mm) rotational clearance

Fasteners: Drill-Kwik® screws and Sex bolts

Length Options: Standard and Custom

Door Reinforcement: None required

Frame Reinforcement: None required to 200 lbs. Heavier weight use 16 gauge channel

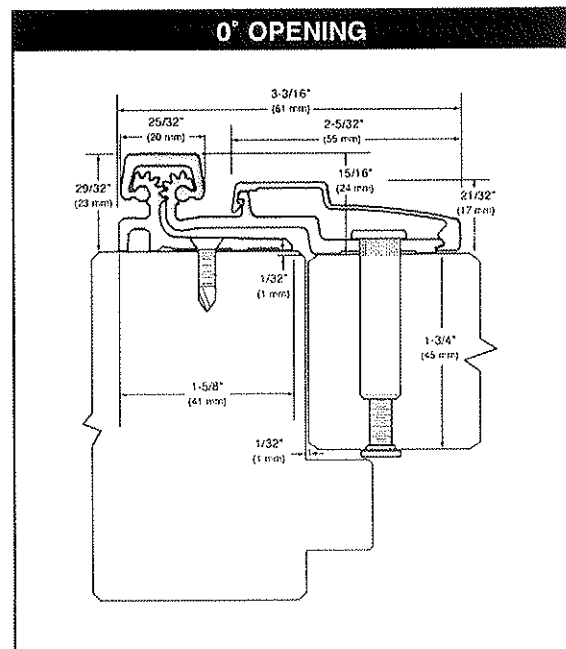
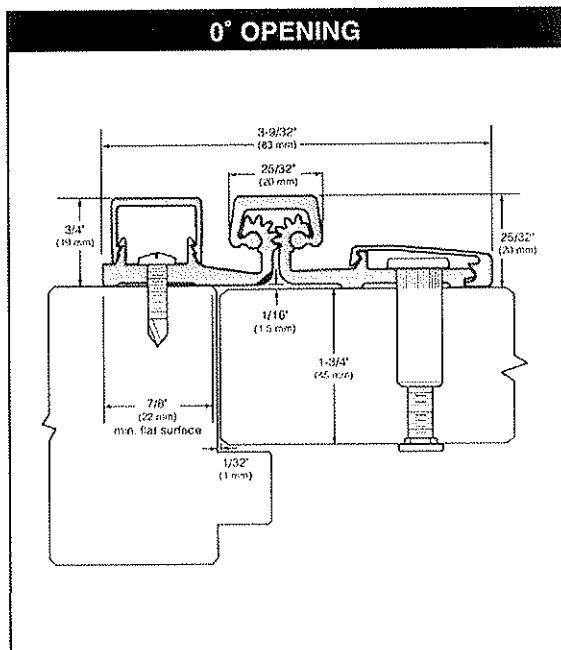
Fire Rating: Up to 3 hr. metal and 90 min. wood composite (with studs)

Special Features:

- Can be used with any door and frame material
- Security molding
- 1/32" (1 mm) inset

Hinge Length - Inches	79	83	85	95	119	
Hinge Length - cm	200.7	210.8	215.9	241.3	302.3	
Door Screws	Std	8	8	8	9	10
	HD	17	19	19	20	22
Jamb Screws	Std	8	8	8	9	10
	HD	17	19	19	20	22

Hinge Length - Inches		79	83	85	95	119
Hinge Length - cm		200.7	210.8	215.9	241.3	302.3
Door Screws	Std	8	8	8	9	10
	HD	17	19	19	20	22
Jamb Screws	Std	8	8	8	9	10
	HD	17	19	19	20	22





Roton Continuous Geared Hinges

Full Surface

Half Surface



Door of any Material - Heavy Duty

Heavy Duty for high frequency doors or heavy medium frequency doors



780-257 HD

Clearance: $\frac{1}{32}$ " (1 mm) minimum recommended between mullion and door plus standard lockside clearance. $\frac{7}{8}$ " (22 mm) to $2\frac{1}{4}$ " (57 mm) mullion width.

Fasteners: Drill-Kwik® screws and Sex bolts

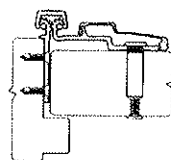
Length Options: Standard and Custom

Door Reinforcement: None required

Frame Reinforcement: None required to 200 lbs. Heavier weight use 16 gauge channel

Fire Rating: Up to 3 hr. metal and 90 min. wood composite (with studs)

- Special Features:
- Double hinge for hanging two entrance doors from a fixed mullion
 - Security moldings
 - $\frac{1}{16}$ " (1.5 mm) inset



Door of any Material - Standard and Heavy Duty

Standard Duty for medium frequency doors. Heavy Duty for high frequency doors or heavy medium frequency doors.



780-045

780-045 HD

Clearance: $\frac{5}{32}$ " (4 mm) minimum recommended hinge side plus standard lockside clearance

Fasteners: Drill-Kwik® screws and Sex bolts

Length Options: Standard and Custom

Door Reinforcement: None required

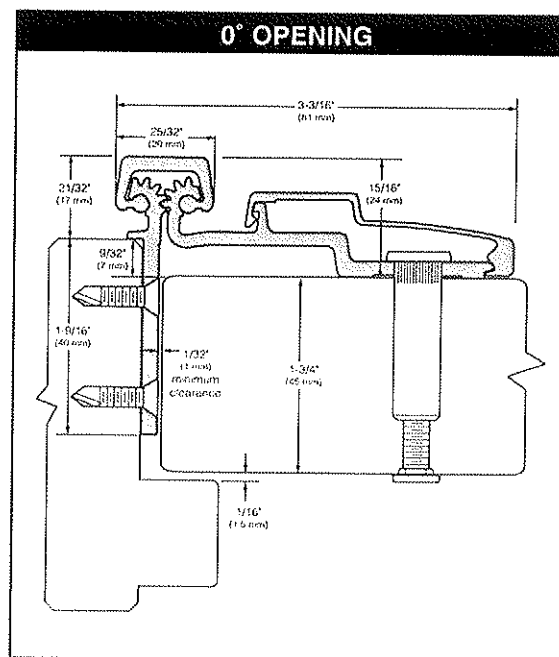
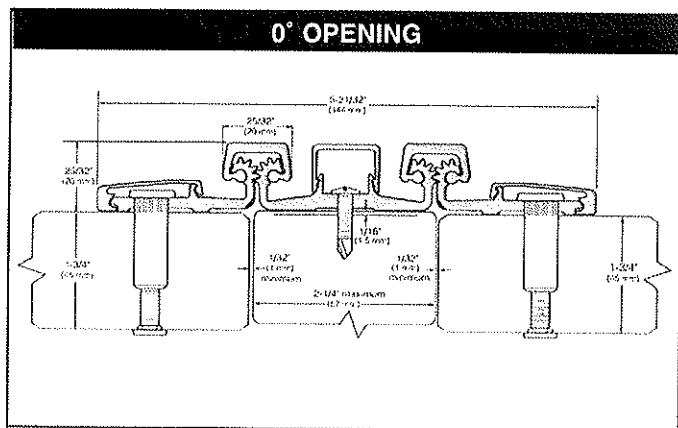
Frame Reinforcement: None required to 200 lbs. Heavier weight use 16 gauge channel

Fire Rating: Up to 3 hr. metal and 90 min. wood composite (with studs)

- Special Features:
- Frame leaf alignment rib for proper hinge location
 - Security molding
 - $\frac{9}{32}$ " (7 mm) inset

Hinge Length - inches		79	83	85	95	119
Hinge Length - cm		200.7	210.8	215.9	241.3	302.3
Door Screws	HD	16	16	16	18	20
Jamb Screws	HD	17	19	19	20	22

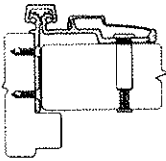
Hinge Length - Inches		79	83	85	95	119
Hinge Length - cm		200.7	210.8	215.9	241.3	302.3
Door Screws	Std	8	8	8	9	10
	HD	8	8	8	9	10
Jamb Screws	Std	15	19	19	19	21
	HD	15	19	19	19	21



Roton Continuous Geared Hinges



Half Surface



Door of any Material - Standard and Heavy Duty

Standard Duty for medium frequency doors. Heavy Duty for high frequency doors or heavy medium frequency doors.

780-046

780-046 HD

Clearance: 5/32" (4 mm) minimum recommended hinge side plus standard lockside clearance

Fasteners: Drill-Kwik® screws and Sex bolts

Length Options: Standard and Custom

Door Reinforcement: None required

Frame Reinforcement: None required to 200 lbs. Heavier weight use 16 gauge channel

Fire Rating: Up to 3 hr. metal and 90 min. wood composite (with studs)

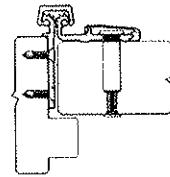
Special Features:

- Complete frame rabbet coverage for 1 3/4" (45 mm) frames, with 1 3/8" (35 mm) doors

- Frame leaf alignment rib for proper hinge location

- Security molding

- 9/32" (7 mm) inset



Door of any Material - Standard and Heavy Duty

Standard Duty for medium frequency doors. Heavy Duty for high frequency doors or heavy medium frequency doors.

780-053

780-053 HD

Clearance: 5/32" (4 mm) minimum recommended hinge side plus standard lockside clearance

Fasteners: Drill-Kwik® screws and Sex bolts

Length Options: Standard and Custom

Door Reinforcement: None required

Frame Reinforcement: None required to 200 lbs. Heavier weight use 16 gauge channel

Fire Rating: Up to 3 hr. metal and 90 min. wood composite (with studs)

Special Features:

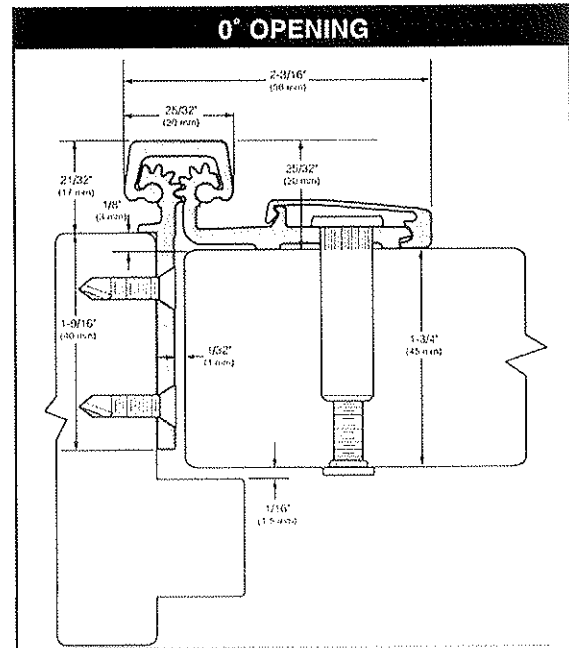
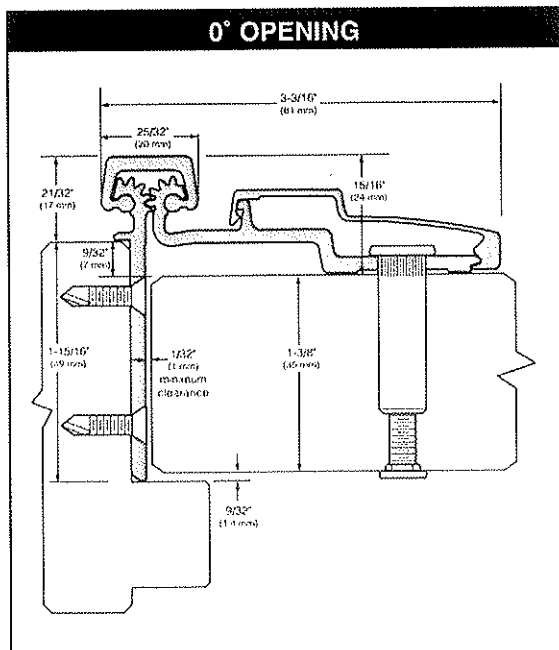
- Frame leaf alignment rib for proper hinge location

- Security molding

- 1/8" (3 mm) inset

Hinge Length - inches		79	83	85	95	119
Hinge Length - cm		200.7	210.8	215.9	241.3	302.3
Door Screws	Std	8	8	8	9	10
	HD	8	8	8	9	10
Jamb Screws	Std	15	19	19	19	21
	HD	15	19	19	19	21

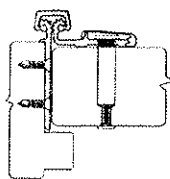
Hinge Length - Inches	79	83	85	95	119	
Hinge Length - cm	200.7	210.8	215.9	241.3	302.3	
Door Screws	Std	8	8	8	9	10
	HD	8	8	8	9	10
Jamb Screws	Std	15	19	19	19	21
	HD	15	19	19	19	21





Roton Continuous Geared Hinges

Half Surface



Door of any Material - Standard and Heavy Duty

Standard Duty for medium frequency doors. Heavy Duty for high frequency doors or heavy medium frequency doors.

780-054
780-054 HD



Clearance: 5/32" (4 mm) minimum recommended hinge side plus standard lockside clearance

Fasteners: Drill-Kwik® screws and Sex bolts

Length Options: Standard and Custom

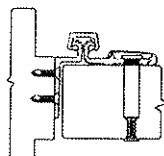
Door Reinforcement: None required

Frame Reinforcement: None required to 200 lbs. Heavier weight use 16 gauge channel

Fire Rating: Up to 3 hr. metal and 90 min. wood composite (with studs)

Special Features:

- Frame leaf alignment rib for proper hinge location
- Security molding
- 1/8" (3 mm) inset



Door of any Material - Standard and Heavy Duty

Standard Duty for medium frequency doors. Heavy Duty for high frequency doors or heavy medium frequency doors.

780-155
780-155 HD

Clearance: 5/32" (4 mm) minimum recommended hinge side plus standard lockside clearance

Fasteners: Drill-Kwik® screws and Sex bolts

Length Options: Standard and Custom

Door Reinforcement: None required

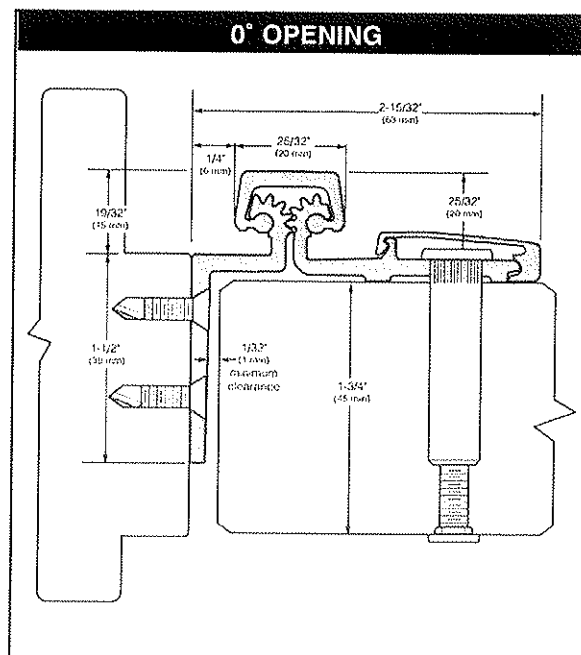
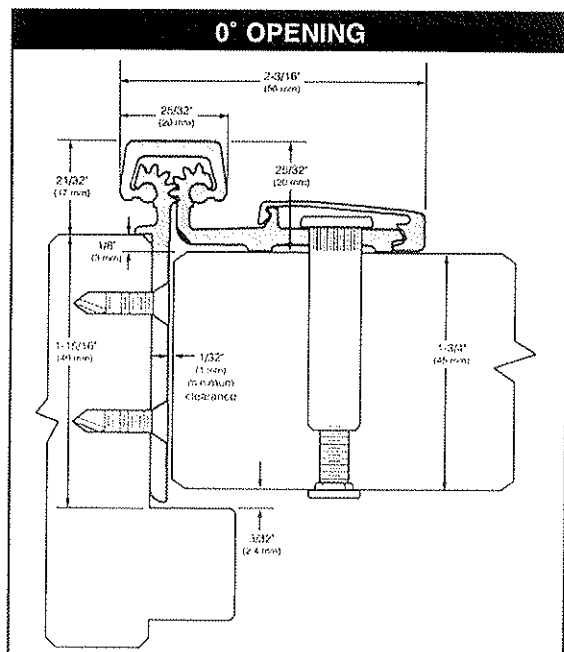
Frame Reinforcement: None required to 200 lbs. Heavier weight use 16 gauge channel

Special Features:

- For center hung and double egress conversions
- Security molding

Hinge Length - Inches		79	83	85	95	119
Hinge Length - cm		200.7	210.8	215.9	241.3	302.3
Door Screws	Std	8	8	8	9	10
	HD	8	8	8	9	10
Jamb Screws	Std	15	19	19	19	21
	HD	15	19	19	19	21

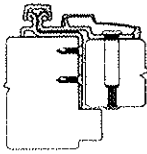
Hinge Length - Inches	79	83	85	95	119	
Hinge Length - cm	200.7	210.8	215.9	241.3	302.3	
Door Screws	Std	8	8	8	9	10
	HD	8	8	8	9	10
Jamb Screws	Std	14	12	12	14	16
	HD	14	18	18	20	26



Roton Continuous Geared Hinges



Half Surface



Door of any Material - Heavy Duty

Heavy Duty for high frequency doors or heavy medium frequency doors

780-211 HD



Clearance: $5/32"$ (4 mm) minimum recommended hinge side plus standard lockside clearance

Fasteners: Drill-Kwik® screws and Sex bolts

Length Options: Standard and Custom

Door Reinforcement: None required

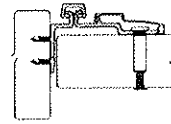
Frame Reinforcement: None required to 200 lbs. Heavier weight use 16 gauge channel

Fire Rating: Up to 3 hr. metal and 90 min. wood composite (with studs)

Special Features: • Frame leaf wrap-around reinforcement for damaged frames

• Security molding

• $1/16"$ (1.5 mm) inset



Door of any Material - Standard and Heavy Duty

Standard Duty for medium frequency doors. Heavy Duty for high frequency doors or heavy medium frequency doors.

780-213

780-213 HD

Clearance: $5/32"$ (4 mm) minimum recommended hinge side plus standard lockside clearance

Fasteners: Drill-Kwik® screws and Sex bolts

Length Options: Standard and Custom

Door Reinforcement: None required

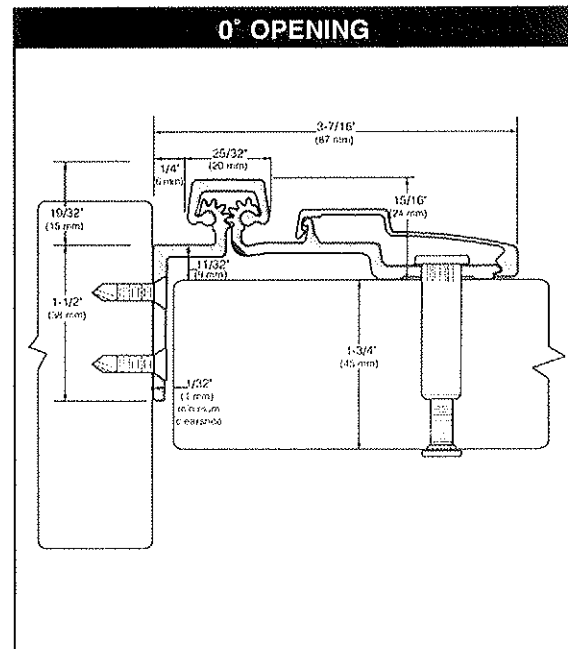
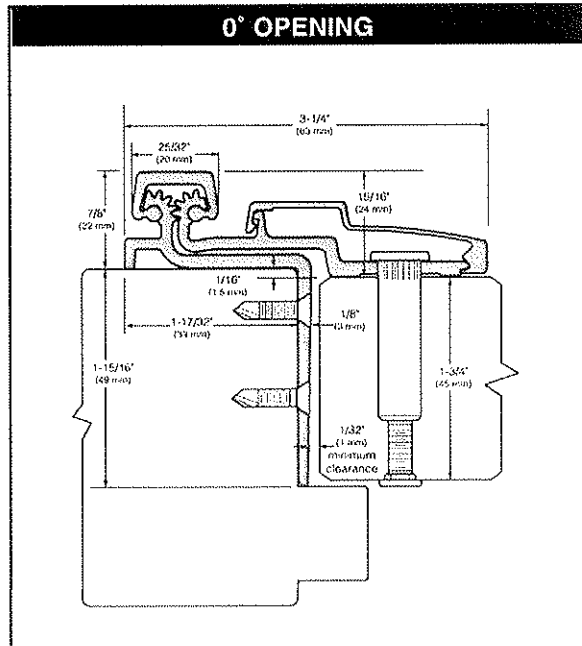
Frame Reinforcement: None required to 200 lbs. Heavier weight use 16 gauge channel

Special Features: • For center hung door where large edge radii or finger guards require a long reach

• Security molding

Hinge Length - Inches	79	83	85	95	119
Hinge Length - cm	200.7	210.8	215.9	241.3	302.3
Door Screws	HD 8	8	8	9	10
Jamb Screws	HD 15	19	19	19	21

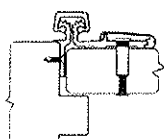
Hinge Length - Inches	79	83	85	95	119
Hinge Length - cm	200.7	210.8	215.9	241.3	302.3
Door Screws	Std 8	8	8	9	10
Door Screws	HD 8	8	8	9	10
Jamb Screws	Std 14	12	12	14	16
Jamb Screws	HD 14	18	18	20	26





Roton Continuous Geared Hinges

Half Surface



Door of any Material - Standard and Heavy Duty

Standard Duty for medium frequency doors. Heavy Duty for high frequency doors or heavy medium frequency doors.

780-259

780-259 HD

Clearance: 5/32" (4 mm) minimum recommended hinge side plus standard lockside clearance

Fasteners: Drill-Kwik® screws and Sex bolts

Length Options: Standard and Custom

Door Reinforcement: None required

Frame Reinforcement: None required to 200 lbs. Heavier weight use 16 gauge channel

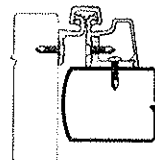
Special Features:

- Frame leaf alignment rib for proper hinge location

- For custom applications with thinner doors

- Security molding

- 1/8" inset



Door of any Material - Heavy Duty

Heavy Duty for high frequency center hung doors or heavy medium frequency center hung doors.

780-300 HD

Clearance: 1/32" (1 mm) minimum recommended between door and frame

Fasteners: Drill-Kwik® screws

Length Options: Standard and Custom

Door Reinforcement: None required to 200 lbs. Heavier weight use 16 gauge channel

Frame Reinforcement: None required to 200 lbs. Heavier weight use 16 gauge channel

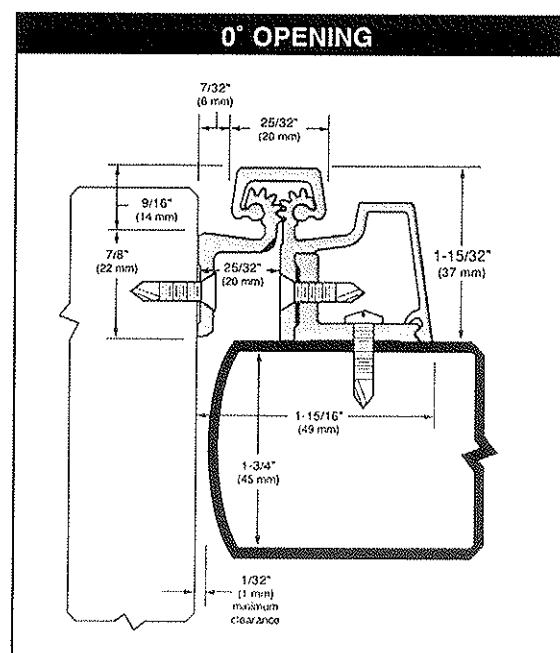
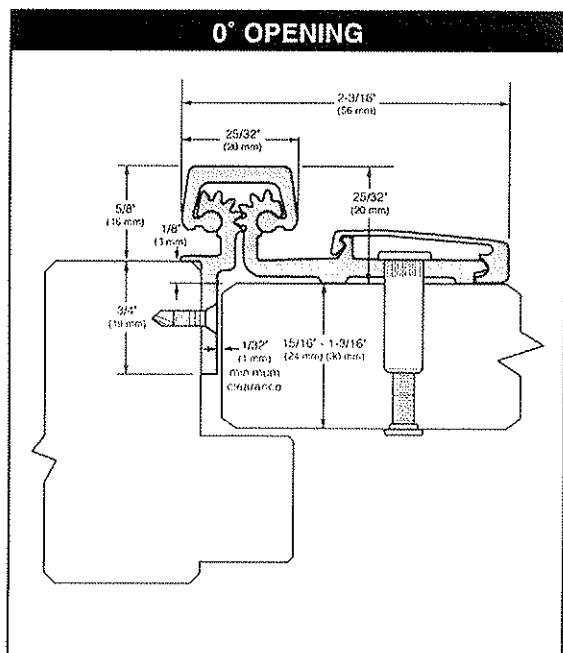
Special Features:

- For center hung door application

- 3/4" (19 mm) minimum inset

Hinge Length - Inches		79	83	85	95	119
Hinge Length - cm		200.7	210.8	215.9	241.3	302.3
Door Screws	Std	8	8	8	9	10
	HD	8	8	8	9	10
Jamb Screws	Std	10	12	12	14	16
	HD	12	14	14	16	20

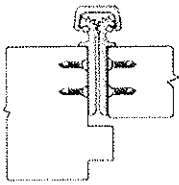
Hinge Length - inches		79	83	85	95	119
Hinge Length - cm		200.7	210.8	215.9	241.3	302.3
Door Screws	HD	14	14	14	16	20
Jamb Screws	HD	14	14	14	16	20



Roton Continuous Geared Hinges



Extra Heavy Duty

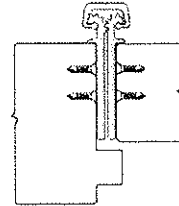


For Doors from 1 1/4" (45 mm) to 2 1/4" (60 mm) Thick

Strong enough to swing doors heavier than 600 lbs, wider than four feet, taller than ten feet; heavy high frequency doors, extremely heavy low frequency doors.

1200-600 XHD

- Clearance: 15/32" (12 mm) hinge side plus standard lockside clearance
- Fasteners: 1/4"-20 Drill-Kwik® screws or optional 1/4-14 x 1 1/2" wood screws
- Length Options: Standard 83", 95", 119" and Custom
- Door Reinforcement: None required to 200 lbs. Use 16 gauge channel at higher weight
- Frame Reinforcement: Frame reinforcement recommended for doors in excess of 200 lbs. and 3 feet in width
- Special Features:
- Lead lined model for hospital x-ray room doors with double row of screws to straddle lead (Specify "LL")
 - Frame and door leaf alignment ribs for proper hinge and door location



For Doors more than 2 1/4" (60 mm) Thick

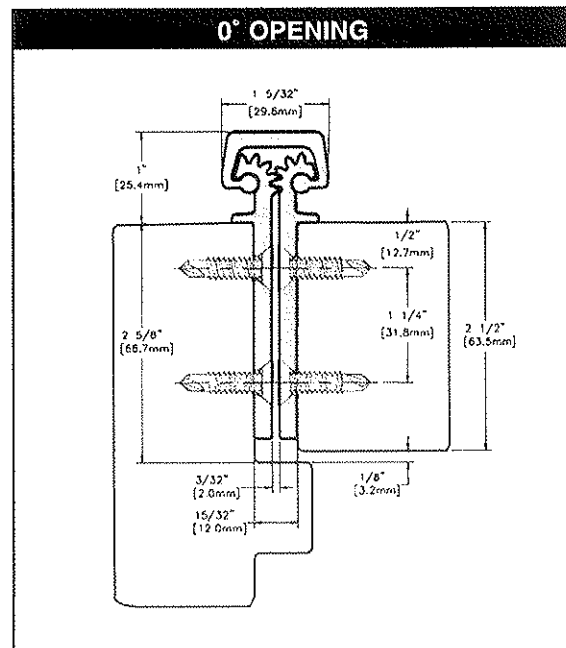
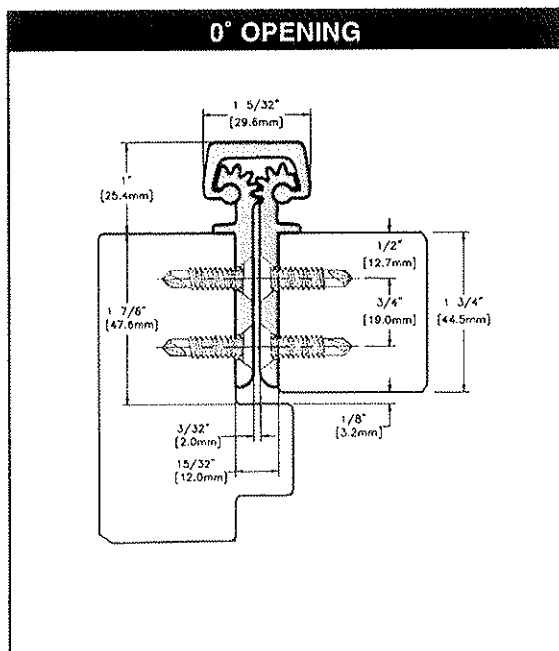
Strong enough to swing doors heavier than 600 lbs, wider than four feet, taller than ten feet; heavy high frequency doors, extremely heavy low frequency doors.

1200-650 XHD

- Clearance: 15/32" (12 mm) hinge side plus standard lockside clearance
- Fasteners: 1/4"-20 Drill-Kwik® screws or optional 1/4-14 x 1 1/2" wood screws
- Length Options: Standard 83", 95", 119" and Custom
- Door Reinforcement: None required to 200 lbs. Use 16 gauge channel at higher weight
- Frame Reinforcement: Frame reinforcement recommended for doors in excess of 200 lbs. and 3 feet in width
- Special Features:
- Lead lined model for hospital x-ray room doors with double row of screws to straddle lead (Specify "LL")
 - Frame and door leaf alignment ribs for proper hinge and door location

Hinge Length - Inches		83	95	119
Hinge Length - cm		210.8	241.3	302.3
Door Screws	XHD	26	28	33
Jamb Screws	XHD	26	28	33

Hinge Length - Inches		83	95	119
Hinge Length - cm		210.8	241.3	302.3
Door Screws	XHD	26	28	33
Jamb Screws	XHD	26	28	33





Notes

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.